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ENGLISH BOTANY;

OR,

COLOURED FIGURES

OF

BRITISH PLANTS,

WITH THEIR

ESSENTIAL CHARACTERS, SYNONYMS, AND PLACES OF GROWTH.

BY

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THE FIGURES BY

JAMES SOWERBY, F.L.S. G.S.. &c.

"..... quos ipsa volentia rura
Sponte tulere sua ...." VIRGIL.

THE THIRD EDITION,

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WITH THE DESCRIPTIONS SHORTENED, AND OCCASIONAL REMARKS ADDED.

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The seventh volume of the new edition of "English Botany" being completed, and with it the figures and descriptions of all the Phanerogamous or flowering plants contained both in the original work and its supplement, it becomes the duty of the editor of the last five volumes to return the thanks of the proprietor to his numerous subscribers for their support in an undertaking of so much magnitude, and which necessarily involved an expence that without such aid must have precluded its publication. In so doing, however, his task would be but imperfectly fulfilled, were he to omit observing, that the series now concluded constitutes only a moiety of the original English Botany of the late Mr. Sowerby, which includes figures of nearly 3000 species of native plants, and forms, unquestionably, the most comprehensive, illustrated national flora that has ever appeared in this or any other country.

In every climate the Cryptogamous or flowerless plants constitute a highly important portion of the vegetable creation, and one most difficult of study without the assistance of figures. It is to this department, especially, that the work just mentioned owes a great degree of the celebrity it has acquired. The accuracy with which the minutest plants are portrayed, has occasioned it to become a book of general reference, as well to the foreign as to the British bo-

tanist. In accordance with the wishes of a number of his subscribers, who are anxious to possess a work so valuable in its utmost available extent, the proprietor purposes the publication of the remaining portion on the same terms and upon the same plan as the preceding, with the exception that the plates will be more fully coloured, equal in most instances to those of the original edition.

The Ferns, Mosses, Lichens, Sea-weeds, and the several small intermediate groups, present a beauty of structure, that, though owing to the smallness of the organs in which it is manifested, hidden from the mere superficial observer, cannot fail to interest those who have either taste to admire, or perseverance to examine it.

No exertion will be spared by the editor to render the descriptive and historical portion as complete as the concise plan of the work will admit.

CHARLES JOHNSON.

Camberwell, Feb. 1, 1840.

ENGLISH BOTANY.

Class XX. GYNANDRIA.

With the exception of the genus Aristolochia, all of the British species referable to this class belong to the

Nat. Order Orchidaceæ,

the most isolated, owing to the peculiar structure of the flower, of all the orders so entitled.

The British Orchidaceæ are all herbaceous plants, with perennial roots consisting of cylindrical fibres, which are frequently accompanied by fleshy tubers: in the latter case, one of these tubers is formed annually, and bears on its summit the rudiments of the next year's vegetation. The leaves are always entire, with parallel veins, alternate, sessile and sheathing at the base. The flowers are irregular, sessile in a terminal spike, superior, the long, twisted germen supplying the place of peduncle; they consist of a double series of envelopes, calyx and corolla, each formed of three pieces but often confounded in colour: the lower petal, or rather that which owing to the twisting of the germen points downward, is generally by far the most conspicuous portion of the flower, and is termed the *lip*. The remaining organs are obscure as compared with those of correspondent functions in other flowering plants; it is, however, considered that the filaments of 3 stamens are associated with the style, forming a more or less columnar, fleshy process observed in the centre of the flower: upon the fore part of this column the stigma is evident in the form of a little cup secreting a viscous fluid; a single 2-celled anther is placed above it, the central one of the series, the 2 lateral stamens being imperfect in all the genera of Orchidaceæ, Cypripedium alone excepted.

In no part of organic creation does nature appear, to the wondering gaze of man, to have been so much guided by mere caprice, as in the structure of the flowers of this singular but surpassingly beautiful tribe of plants, which often show mimic representations of various animal forms, especially insects. To discuss the probable end to which this structure is adapted

would be out of place here, but the curious and grotesque imitations presented by many of our British species are too remarkable not to afford ground for speculative inquiry; and the numerous elegant, yet fantastic forms met with in those of tropical countries, render this natural group one of the most interesting throughout the vegetable kingdom, although the plants are of comparatively little value in human œconomy.

Not any of the Orchidaceæ are poisonous, and their tubers contain a large proportion of nutritive matter which is often used as food.

Certain peculiarities in the development of the anthers and especially in the structure of the pollen, which differs from that of most other plants, afford characters of considerable importance in distinguishing the sections of the order.

Order I. MONANDRIA.

(The central stamen anther-bearing; 2 lateral ones abortive.)

* *Anther of 2 distinct vertical cells, fixed to the top of the column, immediately above the stigma. Pollen masses stalked, composed of an indefinite number of grains which cohere elastically, having a gland at the base of the stalk.*

Genus CCCCXLII. ORCHIS. *Orchis.*

Gen. Char. *Flowers* ringent; the lip lobed, spurred at the base. *Glands* of the stalks of the pollen-masses inclosed in a common little pouch.

Plants all tuberous. Chiefly European.

† *Tubers roundish, undivided.*

ORCHIS pyramidalis. *Pyramidal Orchis.* Tab. **1193.**

Tubers oval. Calyx-leaves spreading, acuminate. Lip with 3 equal, entire lobes, and two protuberances at the base above. Spur filiform, subulate, longer than the germen. Stalks of the pollen-masses united by one gland.

Orchis pyramidalis, *Linn. E. B.* 110. *Smith* IV. 10. *Hooker ed.* 2. 369. *ed.* 3. 375. *ed.* 4. 314. *Macreight* 226. Anacamptis pyramidalis, *Richard. Lindley* 261.

Grows in meadows and pastures, chiefly in a chalky or clayey soil. Leaves very much acuminated, rather glossy, without spots. Flowers crowded, and forming at first a dense pyramidal spike; they appear about July, and are usually of a bright-purplish-rose colour, rarely white. Perennial.

ORCHIS Morio. *Green-winged Meadow Orchis.* Tab. **1194.**

Tubers nearly globose. Calyx-leaves ascending, many-ribbed, converging, inclosing the 2 lateral petals. Lip trilobate, somewhat crenate; the middle lobe deeply emarginate. Spur obtuse, ascending, rather shorter than the germen.

Orchis Morio, *E. B.* 2059. *Smith* 4. 11. *Lindley* 260. *Hooker ed.* 2. 367. *ed.* 3. 373. *ed.* 4. 313. *Macreight* 226.

Moist meadows and pastures in many parts of England produce this pretty Orchis in abundance, but it is most frequent in chalky or calcareous soils. The newly-formed tuber is always separated half an inch or more from the old one, by growing out upon a sort of stalk, instead of being side by side with it, as occurs in most other species; a provision of nature to prevent the next year's plant suffering from the exhaustion of the soil by its predecessor. Stem varying in height from a few inches to a foot. Leaves lanceolate, deep-green, not spotted, glossy beneath. Spike lax, few-flowered. Flowers generally deep-purple with green ribs; the lip white in the middle, with raised purple spots, its lobes deflexed. The green ribs of the calyx will distinguish this species at first sight. Flowers in May and June. Perennial.

ORCHIS mascula. *Early purple Orchis.* Tab. **1195.**

Tubers oval. Calyx-leaves 3-ribbed; the 2 lateral ones reflexed upwards. Lip 3-lobed, crenated; the middle lobe emarginate. Spur obtuse, rather longer than the germen.

Orchis mascula, *E. B.* 631. *Smith* IV. 11. *Lindley* 260. *Hooker ed.* 2. 368. *ed.* 3. 373. *ed.* 4. 313. *Macreight* 226.

The most common of our native Orchises, being a frequent ornament of meadows, pastures and woods throughout the kingdom, varying in height and luxuriance according to soil and situation. Leaves mostly all radical, lanceolate, smooth, shining, and in general more or less spotted with dark-purple. Spike rather lax, many-flowered, oblong. Flowers deep-purple-red, sometimes nearly white, fragrant in the morning and after sunset; the lip always pale at the base, with purple dots. Perennial. Flowers in May and June.

The substance commonly known by the name of Saloop or Salep, a corruption from the Persian, *Sahleb*, is prepared from the tubers of this and other species of the same family. It consists almost wholly of a peculiar proximate principle which modern chemists have named *Bassorin*, and is said to contain more nutritive matter in proportion to its bulk than any other vegetable product, an ounce a-day being sufficient to sustain a man; hence it is a favourite article of provision for the caravans in eastern countries.

ORCHIS ustulata. *Dwarf dark-winged Orchis.* Tab. **1196.**

Tubers oval. Leaves lanceolate, acute. Bracteas as long as the germen. Calyx-leaves converging. Lip tripartite, with raised spots; segments narrow, the middle one bifid. Spur very short.

Orchis ustulata, *E. B.* 18. *Smith* IV. 12. *Lindley* 260. *Hooker ed.* 2. 368. *ed.* 3. 374. *ed.* 4. 313. *Macreight* 226.

A native of dry, chalky pastures, rising to the height of 4 or 5 inches, and flowering in June. The spike is seldom so lax as in our figure, which represents its form rather in fruit than in flower. The lip of the blossom is white, with raised purple spots; the calyx of a dark purplish-brown, whence the specific name, signifying *scorched*, an appellation which the appearance of the half-expanded spike sufficiently justifies. Perennial.

Notwithstanding the diminutive size and difference in habit of the present species, it is not very much unlike the following *O. fusca*, and they are not easily distinguishable by written characters.

ORCHIS FUSCA. *Great brown-winged Orchis.* TAB. **1197.**

Tubers oval. Leaves elliptic-oblong, glossy. Calyx-leaves obtuse, converging. Lip deeply trilobate, with raised, rough points; its lateral lobes linear-oblong, intermediate one large, obcordate, crenate and emarginate, with a point in the sinus. Spur obtuse, about half the length of the germen.

Orchis militaris, *E. B.* 16. *not of Linn.* O. fusca, *Smith* IV. 13. *Lindley* 260. *Hooker ed.* 2. 368. *ed.* 3. 374. *ed.* 4. 313. *Macreight* 226.

The woods and chalk hills of Kent, especially around Cobham, have long been noted habitats of this beautiful species of Orchis, whose large and numerous flowers and stately habit render it the most conspicuous of all of native growth. The stem rises from 1 to 2 feet in height, and the cylindrical flower-spike is often from 6 to 8 inches long. Leaves ovato-oblong, obtuse, shining. Calyx (helmet) dark-greenish-purple; lip pale-purple, variegated with dark spots. Perennial. Flowers in May.

ORCHIS MILITARIS. *Military Orchis.* TAB. **1197*.**

Tubers oval. Calyx-leaves converging, acuminate. Lip deeply trilobate, rough, with raised dark points; the 2 lateral lobes linear-oblong, the middle one dilated below and deeply emarginate, with an intermediate point. Spur obtuse, not half the length of the germen.

Orchis militaris, *Linn. E. B. Supp.* 2675. *Smith* IV. 14. *Lindley* 260. *Hooker ed.* 2. 368. *ed.* 3. 374. *ed.* 4. 313. *Macreight* 226.

Found chiefly on the chalk hills of Berkshire and Oxfordshire, and especially about Reading. Leaves oblong, rather acute. Calyx (helmet) pale-ash colour; lip deep-purple, white in the centre, the dark raised spots forming lines along the segments. Perennial. Flowers in May.

A more slender plant and with smaller flowers than the preceding species.

ORCHIS TEPHROSANTHOS. *Monkey Orchis.* TAB. **1198.**

Tubers oval. Calyx-leaves connivent, acuminate. Lip deeply trilo-

bate, rough with small crystalline points; the lateral lobes linear, the middle one deeply bifid with a point in the sinus, the segments nearly equaling the lateral lobes. Spur obtuse, half as long as germen.

Orchis militaris, β. *E. B.* 1873. O. tephrosanthos, *Smith* IV. 16. *Lindley* 260. *Hooker ed.* 2. 369. *ed.* 3. 374. *Macreight* 226.
O. macra, *Lindley*. *Hooker ed.* 4. 314.

Grows on chalk hills in the middle and southern counties of England, especially on those of Kent, Berkshire and Oxfordshire. Spike rather short. Bracteas generally very small. Flowers palish-purple, the lip deeper, sprinkled with minute crystalline points. Perennial. Flowers in May.

The 4 nearly equal linear segments of the lip constitute the chief character by which this species will be distinguished from the two preceding. Notwithstanding the difference of habit they may all prove to be only varieties of the same. All three give out in drying the peculiar odour of *Anthoxanthum odoratum*.

ORCHIS HIRCINA. *Lizard Orchis.* TAB. **1199.**

Tubers somewhat globose. Calyx-leaves converging, concave. Lip downy, with 3 linear segments; the middle one very long, twisted, abruptly bifid at the extremity. Spur very short.

Satyrium hircinum, *Linn. E. B.* 34. Orchis hircina, *Scopoli. Smith* IV. 17. *Lindley* 260. *Hooker ed.* 2. 369. *ed.* 3. 374. *ed.* 4. 314. *Macreight* 226.

The largest of the British Orchidaceæ, sometimes attaining the height of 3 feet, and producing above 60 flowers on its spike. A native of thickets and shady places on the chalk hills of Kent and Surrey: it was formerly plentiful about Dartford, but a specimen is now of rare occurrence. Sir J. E. Smith lamented the cupidity of collectors of the past generation, but how much more evil is enacted by those of the present; some of whom, not content with gathering specimens for the herbarium, root up by thousands the gems and beauties of our national flora, not for the purposes of science, but of sordid gain. By such, professedly botanists, it is to be feared that the most common even of the Orchis family will be soon rendered as rare in the vicinity of the metropolis, where they once abounded, as has long since been the *O. hircina*.

When met with, this singular plant cannot be mistaken. The flowers are of a dingy-purplish-green, the curiously lengthened and twisted lip excepted, which is of a deeper but still dull-purple with darker spots, and does not very unaptly resemble the animal indicated by its English name: the Latin one is derived from the fetid odour of the inflorescence, which is similar to that of the goat. Perennial. Flowers in July and August.

ORCHIS LAXIFLORA. *Lax-flowered Marsh Orchis.* TAB. **1199*.**

Tubers roundish-ovate. Lateral sepals (calyx-leaves) reflexed. Upper petals connivent. Lip trilobate; the lateral lobes rounded in front and crenulated, longer than the truncate, nearly obsolete,

slightly emarginate intermediate one. Spur cylindrical, emarginate, much shorter than the germen.

Orchis laxiflora, *E. B. Supp. new series* 2828.

Common in Guernsey and Jersey in wet meadows and bogs, growing with *O. latifolia*, and *O. maculata*, from both of which it is well distinguished by habit, and especially by the rounded and undivided instead of palmate tubers. Its affinity seems closer to *O. Morio* than any other species, but habit and the reflexed instead of connivent sepals prevent our confounding them. Stem 1 to 2 feet high, angular and rough above. Leaves numerous, narrow-lanceolate, acuminate, 3-ribbed. Bracteas coloured, nearly the length of the germen, 7-to 3-ribbed. Flowers rather large, purplish-red; forming a lax, spreading spike. Perennial. Flowers in June.

†† *Tubers palmate.*

ORCHIS LATIFOLIA. *Marsh Orchis.* TAB. **1200.**

Tubers somewhat palmate, the lobes unequal. Bracteas longer than the flowers. Calyx-leaves spreading. 2 upper petals connivent. Lip convex, indistinctly 3-lobed, crenate. Spur conical, shorter than the germen.

Orchis latifolia, *E. B.* 2308. *Smith* IV. 21. *Lindley* 260. *Hooker ed.* 2. 369. *ed.* 3. 375. *ed.* 4. 314. *Macreight.* 227.

Frequent in marshes and moist meadows. Stem hollow, varies much in height and luxuriance, and likewise in the breadth of the leaves, which does not always warrant the specific name; the latter, however, are always broader than those of *O. maculata*, nearly erect, very much acuminated, and without spots. The long leafy bracteas, and the imperfectly lobed lip, which has its sides always reflexed, at once distinguish this species. Flowers variable in colour, deep-purple, rose-red, or whitish; they appear in May and June, but in some places as late as July. Perennial.

ORCHIS MACULATA. *Spotted palmate Orchis.* TAB. **1201.**

Tubers palmate, spreading, Bracteas much shorter than the flowers. Calyx-leaves spreading. 2 upper petals connivent. Lip flat, (generally) deeply 3-lobed, crenate. Spur cylindrical, rather shorter than the germen.

Orchis maculata, *E. B.* 632. *Smith* IV. 22. *Lindley* 260. *Hooker ed.* 2. 370. *ed.* 3. 375. *ed.* 4. 315. *Macreight* 227.

Frequent on heaths and pastures, chiefly in a moist soil. More slender than the last, from 12 to 18 inches high. Stem solid. Leaves lanceolate, keeled, spotted with dark-purple on both sides, distant. Flowers pale-purple or white, always more or less spotted and streaked with a deeper hue. Lip always flat, its 2 lateral lobes largest and rounded; the central one often a mere point. Flowers in June and July. Perennial.

GENUS CCCCXLIII. GYMNADENIA. *Gymnadenia.*

GEN. CHAR. *Flowers* ringent; the lip 3-lobed, spurred at

the base. *Glands* of the stalks of the pollen-masses naked, approximated. *Stigma* a cleft.

The limits of this genus are doubtful. The glands being naked distinguish it from *Orchis*; their approximation from *Habenaria*.

GYMNADENIA CONOPSEA. *Fragrant Gymnadenia or Orchis.* TAB. **1202.**

Tubers palmate. 2 lateral calyx-leaves widely spreading. Lip in 3 entire, equal lobes. Spur very slender, filiform, twice as long as the germen.

Orchis conopsea, *Linn. E. B.* 10. *Smith* IV. 23. Gymnadenia conopsea, *Brown. Lindley* 261. *Hooker ed.* 2. 370. *ed.* 3. 375. *ed.* 4. 315. *Macreight* 227.

This pretty species is among the most common of our British Orchidaceæ on chalky or calcareous soils; according to Hooker it is abundant in Scotland, "scenting the atmosphere with its fragrance:" its odour, however, in the land of the "Southron," and in North Wales, where it likewise abounds, is not very pleasant; Sir J. E. Smith has compared it to that of the "red clove pink," but it wants the peculiar spicy pungency that renders the aroma of the "divine flower" so agreeable. Stem rather slender, about a foot high. Leaves linear-lanceolate, somewhat keeled. Flowers in a rather dense linear spike, rose-purple, remarkable for their long filiform spur. Upper calyx-leaves and petals forming a hood. Lip without spots, the segments rounded. The cells of the anthers being perforated at the base, exhibit the large oblong glands of the pollen-stalks. Flowers from June to August. Perennial.

GENUS CCCCXLIV. HABENARIA. *Habenaria.*

GEN. CHAR. *Flowers* ringent, arched or helmet-shaped above. *Lip* spurred at the base. *Glands* of the stalks of the pollen-masses naked, distant.

Not very distinct as to character from the preceding genus, to which some of its species are sometimes referred. H. bifolia is the type of the genus *Platanthera* of Richard. The exotic species are chiefly natives of the western hemisphere.

HABENARIA VIRIDIS. *Green Habenaria. Frog Orchis.* TAB. **1203.**

Tubers palmate. Bracteas longer than the flowers. Calyx-leaves and upper petals connivent. Lip linear, bifid with an intermediate tooth. Spur very short, slightly cloven at the base.

Satyrium viride, *Linn. E. B.* 94. Orchis viridis, *Smith* IV. 20. Platanthera viridis, *Lindley* 261. Habenaria viridis, *Brown. Hooker ed.* 2. 370. *ed.* 3. 376. *ed.* 4. 315. *Macreight* 227.

Hilly meadows and pastures in gravelly and rocky districts not unfrequently present this species, but it will scarcely rank as a common plant. Stem 6 to 9 inches in height. Leaves ovate, the lower ones obtuse. Flowers green; the lip yellowish, brown or reddish about the margin. Perennial. Flowers in June and July.

HABENARIA ALBIDA. *Small white Habenaria.* TAB. **1204.**

Tubers clustered, subulate, undivided. Calyx-leaves and lateral petals nearly equal, ovate, concave. Lip 3-cleft, the middle segment longest, all acute. Spur obtuse, much shorter than the germen.

Satyrium albidum, *Linn. E. B.* 505. Orchis albida, *Smith* IV. 18. Platanthera albida, *Lindley* 261. Habenaria albida, *Brown. Hooker ed.* 2. 370. *ed.* 3. 376. *ed.* 4. 315. *Macreight* 227.

A native of mountain pastures, not unfrequent in Wales and Scotland. Stem 6 to 9 inches in height. Leaves oblong, striated, the lower ones obtuse; light-green, rather glaucous beneath. Spike with numerous small, greenish-white, somewhat fragrant flowers. Lip scarcely longer than the calyx. Perennial. Flowers in June and July.

HABENARIA CHLORANTHA. *Butterfly Habenaria or Orchis.* TAB. **1205.**

Tubers oval, taper. Radical leaves 2, oblongo-obovate, attenuated at the base. Lateral calyx-leaves spreading downwards. Lip lanceolate, entire, obtuse; about half the length of its long filiform spur. Anther cells considerably diverging at the base.

Orchis bifolia, *E. B.* 22. *Smith* IV. 9. not of Linn. Platanthera chlorantha, *Lindley*. Habenaria bifolia, *Hooker ed.* 2. 370. *ed.* 3. 376. H. bifolia *β*. *Hooker ed.* 4. 315. Habenaria chlorantha, *E. B. Supp.* 2806 descrip. *Macreight* 227.

Frequent in moist meadows, pastures, and sometimes in woods, rising to the height of a foot or more, bearing mostly 2, rarely 3, large oblong radical, and about 3 smaller cauline leaves. Flowers in a lax spike, greenish-white; fragrant in the evening and especially so after rain.

There is little difference between this and the following, unless in the divergence of the cells of the anther; whether this may be a feature of sufficient importance to justify the separation of species is doubtful, and opinion is varied respecting the identity of certain other kindred forms originally confounded under the *Orchis bifolia* of Linnæus.

HABENARIA BIFOLIA. *Smaller Butterfly Orchis.* TAB. **1205*.**

"Tubers terminating in a long point. Upper petals connivent, obtuse. Lip linear, entire. Spur twice as long as the germen, subclavate. Anther, oblong, truncate, with its cells parallel."

Habenaria bifolia, *Babington, E. B. Supp. new series* 2806. *Macreight* 227. H. bifolia, *α*. *Hooker ed.* 4. 315. Platanthera bifolia, var. brachyglossa, *Lindley*.

This seems to prefer a drier soil than the last, being found hitherto chiefly on heaths, and is probably only a variety occasioned by dif-

ference of soil or situation. The flowers are smaller and the whole plant more slender than in *H. chlorantha*, but we incline to the opinion of Sir W. Hooker that the goniometer may be too strictly applied in determining species in a family like the Orchidaceæ. Perennial.

Genus CCCCXLV. ACERAS. *Man-Orchis.*

Gen. Char. *Flowers* helmet-shaped above. *Lip* lobed, pendent, without a spur. *Glands* of the stalks of the pollen-masses contained in a common pouch.

This and the two following genera are distinguished from all of the preceding by the absence of the spur-like appendage of the lip or lower petal. They were originally confounded under the general name of *Ophrys*.

ACERAS anthropophora. *Green Man-Orchis*, Tab. **1206**.
Lip longer than the germen.
Ophrys anthropophora, *Linn. E. B.* 29. Aceras anthropophora, *Brown. Smith* IV. 25. *Lindley* 262. *Hooker ed.* 2. 371. *ed.* 3. 377. *ed.* 4. 316. *Macreight* 227.

Frequent in dry chalky and calcareous soils in the south-eastern parts of England, preferring the open pasture and roadside to the shelter of the hedge or thicket. Tubers oval. Stem 12 to 18 inches high, terminating in a long spike of pale-coloured flowers. Calyx-leaves green with a brownish tint at the margins, all connivent, forming a sort of helmet. Lip deeply cloven into 4 linear segments, pale-sulphur colour, often red or purplish at the extremities. The whole flower presenting a ludicrous effigy of the human figure, whence the name. Perennial. Flowers about June.

Genus CCCCXLVI. HERMINIUM. *Musk-Orchis.*

Gen. Char. *Flowers* sub-campanulate. *Lip* without a spur. *Glands* of the stalks of the pollen-masses naked, distinct.

The flowers in this genus are nearly regular, the lip is scarcely distinguishable from the other petals, except in being rather more deeply 3-cleft; it is a little gibbous at the base, but not spurred.

HERMINIUM Monorchis. *Green Musk-Orchis*. Tab. **1207**.
Radical leaves 2, lanceolate.
Ophrys Monorchis, *Linn. E. B.* 71. Herminium Monorchis, *Brown. Smith* IV. 27. *Lindley* 263. *Hooker ed.* 2. 371. *ed.* 3. 377. *ed.* 4. 316. *Macreight* 227.

A native of chalky pastures chiefly in the southern and eastern counties of England. The new tuber in this plant is always pro-

duced at the extremity of one of the radical fibres, and thus vegetates often at the distance of one or two inches from the site of the old one; it does not acquire its full size until long after the flowering season. Stem 3 to 6 inches high, bearing a single small leaf about the middle. Radical leaves 2, oblong-lanceolate. Flowers small, green; smelling like musk, especially in the evening after rain. Stalks of the pollen-masses rather short, glands large, white. Perennial. Flowers in July.

One of the least conspicuous of its family, and easily overlooked.

Genus CCCCXLVII. OPHRYS. *Ophrys. Insectiferous Orchis.*

Gen. Char. *Calyx* and *Petals* spreading. *Lip* convex, without a spur. *Glands* of the stalks of the pollen-masses each in separate pouches.

The genus includes some of the most curious of all the Orchidaceous series, the flowers of all the species bearing a near resemblance to insects. Nearly all the species are natives of Europe.

OPHRYS apifera. *Bee Ophrys.* Tab. **1208**.

Calyx coloured. Petals ciliated. Lip as long as the calyx, tumid, with 5 reflexed marginal lobes; the terminal one awl-shaped. Anther elongated with a hooked point.

Ophrys apifera, *E. B.* 383. *Smith* IV. 30. *Lindley* 262. *Hooker ed.* 2. 371. *ed.* 3. 377. *ed.* 4. 317. *Macreight* 228.

Frequent on chalky downs and pastures in various parts of England, especially on the hills and in the chalk-pits of Kent and Surrey; occasionally in a clayey soil elsewhere. Tubers roundish. Stem 6 to 9 inches high, leafy. Flowers large. Calyx purplish. Petals small, oblong, greenish-white. Lip convex, velvety, of a deep-brownish-purple variegated with yellow, not unaptly resembling the body of the Humming Bee. Perennial. Flowers in June and July.

OPHRYS arachnites. *Late Spider Ophrys.* Tab. **1208***.

Calyx coloured. Petals deltoid, downy. Lip longer than the calyx, tumid, downy, the terminal lobe flattened, projecting (not reflexed).

Ophrys arachnites, *E. B. Supp.* 2596. *Smith* IV. 273. *Lindley* 262. *Hooker ed.* 2. 371. *ed.* 377. *ed.* 4. 317. *Macreight* 228.

Found on the chalky downs of south Kent, where it flowers in May and June. "The general character resembles *O. apifera*:—the essential distinctions are to be sought in the position of the lobe at the extremity of the lip, which is never recurved; in the more or less deltoid form of the purplish or green petals; in the more blunt and short, as well as paler calyx-leaves; and in the proportion borne

by them to the lip, which is either equal or longer, and which presents, in the true plant, a nearly entire margin, and a more obvious shade of green in the various lines and spots upon its dull or intensely brown disk." *Rev. G. E. Smith, E. B. Supp.*

Perhaps a hybrid between *O. apifera* and *O. fucifera.*

OPHRYS ARANIFERA. *Spider Ophrys.* TAB. **1209.**

Calyx herbaceous. Petals linear, smooth. Lip as long as the calyx, tumid, clothed with short dense hairs, rounded, 3-lobed; the middle lobe large, emarginate. Anther acute.

Ophrys aranifera, *E. B.* 65. *Smith* IV. 31. *Lindley* 262. *Hooker ed.* 2. 372. *ed.* 3. 378. *ed.* 4. 317. *Macreight* 228.

Found in similar habitats with *O. apifera,* and sometimes in tolerable plenty, as occurs on some parts of the chalk-range in Surrey and Kent. Somewhat resembling at first sight *O. apifera,* but differing greatly in the form and markings of the lip, which is broader in proportion than that of the latter, and has the middle lobe simply notched, instead of ending in three recurved lobes; in colour too it is different, being of a deep-brown, with pale lines, which, as observed by Hooker, bear some resemblance to the Greek letter π. Perennial. Flowers in April and May.

OPHRYS FUCIFERA. *Drone Ophrys.* TAB. **1209*.**

Petals roughish, expanded at the base. Lip longer than the calyx, obovate, hairy, undivided, with a spreading wavy margin. Column with a blunt, short, incurved point.

Ophrys fucifera, *E. B. Supp.* 2649. *Smith* IV. 32. *Lindley* 262. *Hooker ed.* 2. 372. *ed.* 3. 378. *Macreight* 228. O. aranifera, β. *Hooker ed.* 4. 317.

Cannot be regarded as a species, or even as a permanent variety of the foregoing, as the petals are more or less rough in different individuals of both, and the form of the lip will vary in the same plant in different seasons, being sometimes lobed and at others entire; observation on specimens of *O. aranifera* and the present, cultivated in our own garden during 5 or 6 years, has determined this point. Flowers about a month later than *O. aranifera.*

OPHRYS MUSCIFERA. *Fly Ophrys.* TAB. **1210.**

Calyx herbaceous. Petals linear, smooth. Lip twice as long as the calyx, flat, trilobate; the middle lobe larger and deeply emarginate, the lateral ones expanded. Anther short, obtuse.

Ophrys muscifera, *E. B.* 64. *Smith* IV. 29. *Lindley* 262. *Hooker ed.* 2. 372. *ed.* 3. 378. *ed.* 4. 317. *Macreight* 228.

Frequent in chalky and sometimes in clayey pastures in the southern and eastern parts of England, and especially on the great chalk-range. It is impossible to confound it with any of the preceding. Stem slender, 9 inches to a foot high, few-flowered. The resemblance of the flower to an insect is more remarkable than even in *O. apifera,* the 2 slender lateral petals being accordant with the antennæ. The large blue spot upon the centre of the lip is a striking feature of the species. Perennial. Flowers in May and June.

** *Anthers parallel with the stigma. Pollen-masses farinaceous, or composed of angular grains, fixed to the apex of the stigma, not stalked.*

Genus CCCCXLVIII. GOODYERA. *Goodyera.*

Gen. Char. The 2 lateral *Calyx-leaves* including the gibbous base of the *lip*, which is entire at the extremity. *Column* free, taper, with two teeth at the apex. *Pollen* angular.

The structure of the pollen forms the chief distinction between this and the two following genera.

GOODYERA repens. *Creeping Goodyera.* Tab. **1211.**

Creeping at the base. Root fibrous. Lower leaves ovato-lanceolate, tapering into petioles. Spike somewhat spiral.

Satyrium repens, *Linn.* ( ) *E. B.* 289. Goodyera repens, *Smith* IV. 33. *Lindley* 257. *Hooker ed.* 2. 372. *ed.* 3. 378. *ed.* 4. 317. *Macreight* 228.

Found chiefly in old fir-forests of the Highlands in Scotland, its surculi creeping among the moss and decayed leaves and sending up in the flowering season stems about a span high, clothed with a few bractea-like leaves, and terminating in a sort of spiral spike of small whitish flowers, which, however, nearly all point to one side. Spike, and indeed the whole plant, rather downy, and viscid to the touch. Perennial. Flowers in August.

Genus CCCCXLIX. NEOTTIA. *Lady's-Tresses.*

Gen. Char. The 2 lateral *Calyx-leaves* including the base of the *lip*. *Lip* entire, ventricose, unguiculate, with two fleshy protuberances at the base. *Column* wingless, taper, with two teeth at the apex. *Pollen* farinaceous.

The name *Spiranthes*, allotted to this genus by Richard, in allusion to the remarkable spiral inflorescence, is far preferable to Neottia, which signifies "a bird's nest," and was originally bestowed upon a species of the following genus, *Listera Nidus-Avis*; but it has not been generally adopted.

NEOTTIA spiralis. *Common Lady's-Tresses.* Tab. **1212.**

Tubers oblong. Root-leaves spreading, ovate, acuminate, sub-petiolate. Spike twisted, unilateral. Lip ovate, entire.

Ophrys spiralis, *Linn.* ( ) *E. B.* 541. Neottia spiralis, *Smith* IV. 35. *Hooker ed.* 2. 372. *ed.* 3. 378. *ed.* 4. 318. *Macreight* 228. Spiranthes autumnalis, *Richard. Lindley* 257.

Not very unfrequent on chalk-hills, gravel- and sand-pits and pastures in various parts of England. Tubers 3 or 4, downy, unequal

in size, and unaccompanied by fibres. Stem single, 4 to 6 inches high. Bracteas tumid, acuminate. Flowers all leaning one way, small, greenish-white. Upper calyx-leaf and 2 lateral petals coherent. Lip oblong, crenate at the apex. Stigma and anther acuminate. Perennial. Flowers in August and September. Plant more or less downy and viscid, especially the flower-spike.

NEOTTIA ÆSTIVALIS. *Summer Lady's-Tresses.* TAB. **1212***.

Tubers cylindrical, long. Radical leaves oblong-lanceolate; cauline ones linear-lanceolate. Spike lax, twisted.

Neottia æstivalis, *E. B. Supp. new series* 2817. *Hooker ed.* 4. 318.

Found by Mr. Babington in a wet sandy spot on the banks of St. Ouen's pond, Jersey, and is not unlikely to be an habitant of similar places in the south of England, though hitherto overlooked, its unpretending spikes not being very unlike those of *N. spiralis.* Stem from 3 or 4 inches to a foot in height. Leaves long, nearly linear, erect, glabrous. Flowers whitish, downy within. The slender tubers, long upright leaves, and lax spike distinguish this species from the last. Perennial. Flowers in July and August.

NEOTTIA GEMMIPARA. *Proliferous Lady's-Tresses.* TAB. **1212****.

Leaves lanceolate, as tall as the stalk. Spike 3-ranked. Bracteas smooth. Stigma subulate.

Neottia gemmipara, *E. B. Supp.* 2786. *Smith* IV. 36. *Hooker ed.* 2. 373. *ed.* 3. 379. *ed.* 4. 318. *Macreight* 228. Spiranthes gemmipara, *Lindley* 257.

Hitherto only met with near Castletown, Bantry Bay, county of Cork, Ireland, and in very small quantity. Botanists are it appears but imperfectly acquainted with this plant, which may possibly prove a monstrous variety of some well-known species. "The flowers much resemble those of *N. spiralis,* but the calyx and petals are twice as long as in that species. The germen and the outside of the flowers are downy; every other part of the herb is smooth. Buds destined to flower the following year are formed among the leaves at the bottom of the flower-stalk. After flowering the root decays, and the following spring each bud puts forth a pair of (slender) oblong knobs (3 inches long) and becomes a separate plant;" hence the specific name. Perennial. Flowers in October.

GENUS CCCCL. LISTERA. *Twayblade and Bird's-Nest.*

GEN. CHAR. *Calyx-leaves* and *Petals* loosely connivent. *Lip* 2-lobed, dependent, not spurred. *Anther* fixed by its base to the back of the *Stigma* in a cavity of the column. *Pollen* farinaceous.

This genus, like the preceding, was originally combined with *Ophrys.* The only 3 species known are found in Britain. Root composed of fleshy, fasciculated, simple fibres.

† *Leafy.*

LISTERA OVATA. *Common Twayblade.* TAB. **1213.**

Stem with 2 opposite elliptical leaves. Lip bifid, without teeth or lobes at the base. Column crested with a hood in which the anther is placed.

Ophrys ovata, *Linn.* ( ) *E. B.* 1548. Listera ovata, *Brown. Smith* IV. 37. *Lindley* 258. *Hooker ed.* 2. 373. *ed.* 3. 379. *ed.* 4. 318. *Macreight* 229.

Frequent in woods and moist pastures, being less affected by soil than most of our native Orchidaceæ. Stem a foot or more in height. Leaves seldom more than 2, rarely 4, ribbed, smooth; occupying in the full-grown plant a position a little below the middle of the stem. Spike rather lax. Flowers small, numerous, yellowish-green, sometimes with a slight tinge of red or brown. Petals linear-oblong. Lip long, without any teeth or lobed appendages at the base. Perennial. Flowers in June.

LISTERA CORDATA. *Heart-leaved mountain Twayblade. Least Twayblade.* TAB. **1214.**

Leaves 2, opposite, cordate. Lip bifid, with a tooth or small lobe on each side of the base. Column not crested.

Ophrys cordata, *Linn.* ( ) *E. B.* 358. Listera cordata, *Brown. Smith* IV. 38. *Lindley* 358. *Hooker ed.* 2. 373. *ed.* 3. 379. *ed.* 4. 318. *Macreight* 229.

This little plant is a native of heathy mountains and moors in the north of England and Scotland, preferring moist spots and the shelter of bushes to the more open and drier ground. Stem 3 to 5 inches high, bearing about midway 2 rather small, opposite, heart-shaped leaves. Spike of a few very small green or greenish-brown flowers. The whole plant is a miniature representation of the preceding species, but is well distinguished by the lobes on each side of the base of the lip, independent of the form of the leaves and smaller size. Perennial. Flowers in July and August.

†† *Leafless. Parasitical.*

LISTERA NIDUS-AVIS. *Bird's-Nest.* TAB. **1215.**

Stem with sheathing scales instead of leaves. Lip with 2 spreading lobes, not toothed at the base. Column without crest.

Ophrys Nidus-Avis, *Linn.* ( ) *E. B.* 48. Listera Nidus-Avis, *Smith* IV. 38. *Hooker ed.* 2. 373. *ed.* 3. 379. *ed.* 4. 318. *Macreight* 229. Neottia Nidus-Avis, *Lindley* 258. Epipactis Nidus-Avis, *Swartz.*

Found in shady woods in many parts of England and Scotland upon a chalky or calcareous soil, but probably not otherwise influenced by the latter than by its being the natural site of the Beech-tree, *Fagus sylvatica*, to the roots of which this remarkable plant is always attached. Root, or rather base, consisting of numerous short, thick, fleshy fibres, generally curving upwards. Stem fleshy, tubular, about a foot high; clothed with a few brown sheathing scales. Spike rather lax, many-flowered. The entire plant is of a dingy-yellowish-

brown hue, occasionally with a tinge of purple about the upper part of the stem. Perennial. Flowers in May and June.

For the œconomy of this and other plants of similar habit, see the observations on the genus *Orobanche* Vol. 5. p. 69.

**** Anther terminal, persistent. Pollen-masses pulverulent, or composed of angular granules, eventually fixed to the back of the stigma.*

Genus CCCCLI. EPIPACTIS. *Helleborine.*

Gen. Char. *Lip* very concave at the base, entire or 3-lobed; the middle lobe large, and, as it were, jointed. *Column* plano-convex, with 2 teeth at the apex. *Pollen-masses* acuminate.

These plants have all a creeping rhizoma, fibrous roots, and erect, leafy stems. They formed part of the genus *Serapias* of Linnæus. Chiefly European.

† *Flowers more or less drooping. Column very short.*

EPIPACTIS latifolia. *Broad-leaved Helleborine.* Tab. **1216**.

Leaves broadly ovate, amplexicaul. Lower bracteas longer than the drooping flowers. Perianth connivent. Lip shorter than the calyx-leaves, entire, with a minute point. Germen downy.

Serapias latifolia, *Linn.* ( ) *E. B.* 269. Epipactis latifolia, *Smith* IV. 40. *Lindley* 258. *Hooker ed.* 2. 373. *ed.* 3. 379. *ed.* 4. 319. *Macreight* 229.

Not unfrequent in shady woods and thickets, chiefly in mountainous countries and on calcareous soils. Rhizoma creeping, with long, simple, fleshy fibres. Stem 1 to 2 feet high. Leaves strongly veined, rather rigid; the lower ones broad, stem-clasping; the upper lanceolate, sessile. Flowers drooping, on small peduncles, forming a long, distant spike; varying in colour from a greenish-red to a deep-purple. Perennial. Flowers in July and August.

EPIPACTIS purpurata. *Purple-leaved Helleborine.* Tab. **1216***.

Leaves ovato-lanceolate. Bracteas linear, all twice as long as the flowers. Lip shorter than the calyx, entire. Germen downy.

Epipactis purpurata, *E. B. Supp.* 2775. *Smith* IV. 42. *Lindley* 259. *Hooker ed.* 2. 374. *ed.* 3. 380. *ed.* 4. 319. *Macreight* 229.

If really a distinct species from the preceding, this is not at all unfrequent in the same habitats; but it is much to be questioned whether the above characters ought to be admitted as distinctive, opposed to those of a plant so liable to variation as *E. latifolia.* The purple hue of the leaves is alluded to as a peculiarity belonging to the present species, but whoever has seen *E. latifolia* growing abundantly in the woods of Kent and Surrey, will be aware that every in-

termediate shade from deep-green to reddish-purple may be found in its foliage at different seasons and in different localities. The breadth of the leaves, the proportional length of the bracts, and even the form of the lip are equally variable. First noticed in Worcestershire in 1807, by the Rev. Dr. Abbot, afterwards in the woods of Woburn-Abbey by Mr. Forbes. Perennial. Flowers in August.

EPIPACTIS PALUSTRIS. *Marsh Helleborine.* TAB. **1217.**

Leaves lanceolate, amplexicaul. Bracteas mostly shorter than the slightly-drooping flowers. Lip 3-lobed; middle lobe rounded, crenate, obtuse, as long or longer than the petals, with a notched protuberance on the disk.

Serapias palustris, *E. B.* 270. Epipactis palustris, *Smith* IV. 42. *Lindley* 259. *Hooker ed.* 2. 374. *ed.* 3. 380. *ed.* 4. 319. *Macreight* 229. Serapias longifolia, *Linn.*

Marshes and swampy meadows, especially in chalky districts, produce this species, sometimes in tolerable abundance. The stem rises from a foot to eighteen inches high, bearing several clasping, ribbed, lanceolate leaves; the lowermost occasionally ovate. Flowers fewer and rather larger than those of *E. latifolia*, on short purplish stalks. Calyx purplish-green. Petals and lip rose-coloured and white, the latter with a yellow central line at the base and with the middle lobe beautifully crenated. Perennial. Flowers in July.

†† *Flowers erect, sessile. Column long.*

EPIPACTIS GRANDIFLORA. *Large White Helleborine.* TAB. **1218.**

Leaves elliptico-lanceolate, sessile. Bracteas longer than the erect, sessile flowers. Lip abrupt, shorter than the calyx-leaves, with elevated lines on the disk. Germen smooth.

Serapias grandiflora, *E. B.* 271. Epipactis grandiflora, *Smith* IV. 43. *Hooker ed.* 2. 374. *ed.* 3. 380. *ed.* 4. 319. *Macreight* 229. E. pallens, *Swartz.*

Frequent in woods and thickets on a chalky soil. The stem, beset with many rather large, ribbed leaves, rises to a foot or more in height. Flowers few, large, white, distant; nearly erect upon the long, slender germen. Calyx-leaves and petals nearly equal, connivent; including the short, obtuse lip, which has 3 elevated longitudinal, yellow lines on the upper side. Perennial. Flowers in June and July.

EPIPACTIS ENSIFOLIA. *Narrow-leaved White Helleborine.* TAB. **1219.**

Leaves lanceolate, much acuminated, subdistichous. Bracteas minute, subulate. Flowers sessile, erect. Lip obtuse, about half as long as the calyx-leaves, with elevated lines on the disk. Germen smooth.

Serapias ensifolia, *Linn. E. B.* 494. Epipactis ensifolia, *Smith* IV. 44. *Lindley* 259. *Hooker ed.* 2. 374. *ed.* 3. 380. *ed.* 4. 319. *Macreight* 229.

This is comparatively of rare occurrence, though met with in subalpine woods and thickets in several parts of the kingdom, especially in chalk and limestone districts. It may sometimes be overlooked for the preceding species, the size and colour of the flowers according, but the habit of the two plants is totally different. Upper leaves linear-lanceolate; all nearly distichous. Bracteas very small, never above $\frac{1}{4}$ the length of the germen, unless the lowermost. Lip with white, elevated, longitudinal lines, and a yellow crescent-like spot at the extremity. Perennial. Flowers in May and June.

EPIPACTIS RUBRA. *Purple Helleborine.* TAB. **1220**.

Leaves lanceolate. Bracteas longer than the downy germen. Flowers sessile, erect. Perianth spreading. Lip acuminate, marked with raised undulating lines.

Serapias rubra, *Linn. E. B.* 437. Epipactis rubra, *Smith* IV. 45. *Lindley* 259. *Hooker ed.* 2. 374. *ed.* 3. 380. *ed.* 4. 319. *Macreight* 229.

The rarest native species of this genus, occasionally met with in stony, subalpine woods, in Gloucestershire and the north of England. Stem downy, about a foot high. Leaves lanceolate, much acuminated. Bracteas linear-lanceolate, about the length of the slender, downy germen. Flowers few, purple. Calyx-leaves and petals all directed upwards, ovate, acuminate. Lip whitish, tipped with purple, about equal to the petals in length, with a blunt lobe on each side of the base; the middle segment acute, with yellow, raised, undulating lines running through its whole length. Perennial. Flowers in May and June.

**** *Anther terminal, deciduous. Pollen-masses waxy, definite.*

GENUS CCCCLII. MALAXIS, *Bog-Orchis.*

GEN. CHAR. *Perianth* reversed. *Petals* smaller than the *calyx-leaves*, reflexed. *Lip* superior, without a spur, very small, entire. *Column* very short. *Pollen-masses* in 2 pairs.

The inverse position of the floral series (the lip pointing upward instead of downward) constitutes the chief character of this curious genus, which is thus distinguished from all the rest of our native Orchidaceæ.

MALAXIS PALUDOSA. *Bog-Orchis.* TAB. **1221**.

Stem pentangular. Leaves 4 or 5, oval, very concave; with minute papillæ at the apex. Lip concave, erect, acute, half the length of the calyx; embracing the column at the base.

Malaxis paludosa, *Swartz. E. B.* 72. *Smith* IV. 47. *Lindley* 263. *Hooker ed.* 2. 374. *ed.* 3. 380. *ed.* 4. 320. *Macreight* 229. Ophrys, *Linn.*

A native of spongy, turfy bogs in many parts of the kingdom, and

probably far more frequent than generally considered, its very small size occasioning it to be overlooked. Stem 2 to 4 inches high, terminating in a spike of numerous small, greenish-yellow, erect flowers; the position of whose parts is shewn in the lower figures. (1 and 2) the calyx, the odd sepal pointing downward. (3) the lip pointing upward. (4) the column. Perennial. Flowers in August and September.

Professor Henslow ascertained the small papillæ about the tips of the leaves of this little plant to be minute bulb-like gemmæ, by which it is propagated more certainly than by seeds.

Genus CCCCLIII. LIPARIS. *Liparis.*

Gen. Char. *Perianth* not reversed. *Calyx-leaves* and *Petals* linear, uniform, spreading. *Lip* inferior, large, undivided, reflexed. *Column* elongated. *Pollen-masses* in 2 pairs.

The normal position of the lip distinguishes this genus from *Malaxis* to which our only indigenous species was referred by Swartz.

LIPARIS Loeselii. *Two-leaved Bog-Orchis.* Tab. **1222.**

Stem triangular. Leaves 2, broadly lanceolate. Lip channeled, entire, recurved, longer than the perianth.

Ophrys Loeselii, *Linn. E. B.* 47. Malaxis Loeselii, *Swartz. Smith* IV. 48. Liparis Loeselii, *Lindley* 263. *Hooker ed.* 2. 375. *ed.* 3. 381. *ed.* 4. 320. *Macreight* 229.

Chiefly met with in the eastern parts of England, as in Norfolk, Suffolk, and Cambridgeshire, growing on sandy bogs among rushes. About 6 inches or a span high, bearing two large leaves and an oval bulb at the base. Flowers few (3 to 5), in a lax spike, yellow. Perennial. Flowers in July.

The bulb which is produced at the base of the flowering plant, does not flower the following season, but seems to require two or three years to bring it to the necessary maturity; hence the plant may appear plentifully in a certain situation one summer while the following one scarce a specimen may be discovered, the small leaves of the immature bulb being easily overlooked.

Genus CCCCLIV. CORALLORHIZA. *Coral-root.*

Gen. Char. *Lip* slightly spurred; the spur sometimes adnate to the germen. *Column* free, plano-convex, entire. *Pollen-masses* 4, spherical, oblique, (not parallel).

Natives of Europe and North America. The species are among the least conspicuous of the Orchis tribe; they grow in moist, shady woods about the roots of trees, their curiously

branched rhizomæ creeping horizontally among the decayed foliage.

CORALLORHIZA INNATA. *Coral-root.* TAB. **1223.**

Root (rhizoma?) copiously branched. Spur very short, adnate. Ophrys corallorhiza, *Linn. E. B.* 1547. Corallorhiza innata, *Brown. Smith* IV. 49. *Lindley* 258. *Hooker ed.* 2. 375. *ed.* 3. 381. *ed.* 4. 320. *Macreight* 230.

Found in boggy umbrageous woods in several parts of Scotland. The rhizoma is variously branched and interwoven, fleshy, and downy; sending up here and there slender stems from 6 inches to a span in height, and bearing 2 or 3 lanceolate, acute, sheath-like leaves. Spike lax, bearing 6 or 8 small yellowish-green flowers. Upper calyx-leaf and petals erect, rather connivent; lower ones spreading, curved downwards. Lip oblong, deflexed, waved on the margin, nearly entire; white, with a few purplish spots. Column elongated. Anther with 2 anterior valves. Perennial. Flowers in July.

ORDER II. DIANDRIA.

(The 2 lateral stamens anther-bearing; central one abortive.)

GENUS CCCCLV. CYPRIPEDIUM. *Lady's-Slipper.*

GEN. CHAR. *Perianth* expanding, somewhat cruciform; the 2 lower *calyx-leaves* often combined. *Lip* large, inflated. *Column* terminated by a dilated petaloid lobe, representing the sterile stamen, separating the anthers.

The most beautiful genus of Orchidaceæ found in temperate climates, to which it seems chiefly confined, the known species, with slight exception, being natives of Europe, the alpine parts of Asia, and North America.

CYPRIPEDIUM CALCEOLUS. *Common Lady's-Slipper.* TAB. **1224.**

Stem leafy. Terminal lobe of the column elliptical, obtuse, channeled. Lip shorter than the calyx, somewhat compressed laterally.

Cypripedium Calceolus, *E. B.* 1. *Smith* IV. 51. *Lindley* 263. *Hooker ed.* 2. 375. *ed.* 3. 381. *ed.* 4. 320. *Macreight* 230.

This elegant species is among the most rare of British plants, and will doubtless continue so, if indeed it be not exterminated altogether by the avidity of collectors. Mountainous woods and thickets in the north of England are its habitats when hitherto met with, but it is rarely found a second time in the same vicinity. Root fibrous. Leaves ovato-lanceolate, ribbed. Flower solitary. Calyx-leaves and petals purple, slightly downy, with parallel veins; the 2 lowermost

connected. Lip curved, rounded at the extremity by the contraction of the margin, and inflated; yellow, marked internally with deep-orange or scarlet hairy lines. Perennial. Flowers in July.

Order III. HEXANDRIA.

Genus CCCCLVI. ARISTOLOCHIA. *Birthwort.*

Nat. Order. Aristolochiaceæ.

Gen. Char. *Calyx* superior, tubular, ventricose at the base, dilated at the apex and extended on one side. *Anthers* subsessile, inserted round the base of the style. *Stigma* with 6 lobes. *Capsule* with 6 angles, 6-celled.

A large genus consisting of climbing shrubs or herbs with alternate, simple leaves and dull-purple, brownish or yellow flowers. The species are widely distributed, some being met with in most parts of the globe; but they are chiefly abundant in the tropical regions of America, where the flowers of certain species grow to so large a size that the Indian children use them in play for caps and bonnets; such are those of *A. cordiflora and A. gigantea*, which are said to measure 15 or 16 inches across. The shrubby plants of the genus are remarkable among Dicotyledons on account of their wood not appearing to increase annually by the addition of concentric zones, but to be made up of wedges interposed during the successive seasons of growth.

The roots of all the species are bitter, and several have acquired a high reputation on account of their tonic and stimulating qualities. *A. Serpentaria*, a native of North America, is a valuable medicine in the hands of the modern practitioner, adapted to various forms of fever. It is the famous "Virginian Snake-root," being, as well as several other plants of the same genus, considered an antidote against the bite of venomous serpents.

ARISTOLOCHIA Clematitis. *Common Birthwort.* Tab. **1225**.

Stem erect. Leaves cordate. Flowers upright, in axillary clusters; the lip oblong, shortly acuminate.

Aristolochia Clematitis, *E. B.* 398. *Smith* IV. 53. *Lindley* 225. *Hooker ed.* 2. 375. *ed.* 3. 382. *ed.* 4. 321. *Macreight* 202.

Chiefly met with in the eastern and southern counties of England, occasionally in woods and thickets, but oftener among the ruins of ancient nunneries and abbeys, in the gardens of which it was probably cultivated for medicinal purposes, not being indigenous. Stems numerous, about 2 feet high, striated, rather zigzag. Leaves petio-

late, heart-shaped, entire, with pedate veins. Calyx petaloid, pale-yellow. Perennial. Flowers from July to September. Whole plant smooth.

Class XXI. MONOECIA.

Order I. MONANDRIA.

Genus CCCCLVII. EUPHORBIA. *Spurge.*

Nat. Order. Euphorbiaceæ.

Gen. Char. *Flowers* capitate; each capitulum consisting of several barren flowers and one fertile, and surrounded by a 4- or 5-cleft involucrum, whose segments alternate with 4 or 5 external glands.—*Barren-flowers* (10 to 36) in a verticillated umbel, articulated with their pedicel; monandrous and naked by abortion.—*Fertile flower* solitary in the centre of the barren umbel, naked or with the rudiment of a calyx. *Germen* pedicellated. *Styles* 3, bifurcate. *Capsule* 3-celled, with a seed in each cell; exserted.

This curious and extensive genus presents one of the most remarkable instances of abortion among the organs of fructification that exists throughout the whole vegetable kingdom. The structure of the flowers was completely misunderstood by the early botanists, especially those of the Linnæan school, in whose arrangement Euphorbia occupied a very different place to that which is allotted to it at present, viz. *Dodecandria Monogynia*; each capitulum being regarded as a single flower, whose stamens, though variable as to number in the different species, were generally within the range of the class in question. The discovery of its true position, accordant with the above generic character, is due to the accurate judgment and research of Dr. Brown.

Few genera are so widely distributed, some of the species, which probably amount to 400 or more, being found in almost every part of the globe; presenting a diversity of habit adapting them to every variety of climate and aspect, from the bleak hill-side and damp shady woods of cold and temperate regions to the burning desert of the torrid zone. In the latter site, the leaves are usually abortive, and the stems beset with sharp thorns become very succulent, rivaling in their remarkable and often highly grotesque forms those of the genus *Cactus*, with which a superficial observer would probably confound them.

All of the Euphorbiæ abound in a milky juice which exudes from the slightest wound, and is so acrid as to redden or even to blister the skin. The gum-resin called *Euphorbium* is the inspissated juice of certain African species of the succulent habit; it was formerly much employed in medicine, internally in small doses as a cathartic, and externally as an irritant, but is nearly excluded from modern practice on account of its dangerous causticity. The oil expressed from the seeds of several species is sometimes used as a substitute for that of *Ricinus communis*, the castor-oil, a plant of the same natural order, but in much smaller quantity.

The milky juice of all Euphorbiaceous plants contains more or less of the elastic resin called Caoutchouc or Indian-rubber; indeed the original source of that substance, and the chief supply still to commerce, is a South American plant of this natural order, *Syphonia elastica*, called by the natives Cahùcu.

* *Leaves with stipules. Glands of the involucrum externally supported by membranous processes.*

EUPHORBIA Peplis. *Purple Spurge.* Tab. **1226.**

Stem procumbent, forked. Leaves oblong, semicordate at the base, nearly entire, smooth. Capsule smooth, shining. Seeds smooth, (white).

Euphorbia Peplis, *E. B.* 2002. *Smith* IV. 59. *Lindley* 220. *Hooker ed.* 2. 381. *ed.* 3. 387. *ed.* 4. 326. *Macreight* 204.

A native of the sandy sea-coasts of the southern counties of England, chiefly in Devonshire and Cornwall. Stems spreading from the root, branches dichotomous. Leaves rather fleshy, produced on one side at the base. Whole plant glaucous, and generally much tinged with red or purple. Annual. Flowers from July to September.

** *Leaves without stipules. Glands of the involucrum without membranous processes; rounded on the outside. Cotyledons round.*

EUPHORBIA helioscopia. *Sun Spurge. Wart-Wort.* Tab. **1227.**

Leaves and bracteas membranaceous, obovato-cuneate, serrated at the upper part, nearly smooth. Umbel (generally) 5-stalked. Capsule smooth, shining. Seeds obovate, reticulated, (brown,) not shining.

Euphorbia helioscopia, *E. B.* 883. *Smith* IV. 63. *Lindley* 221. *Hooker ed.* 2. 381. *ed.* 3. 387. *ed.* 4. 326. *Macreight* 204.

A common weed in fields and gardens, on waste ground and roadsides. A span high. Stem a little hairy. Leaves bright-green.

Umbel conspicuous, rarely with only 4 or 3 stalks. Glands of the involucrum 4, yellow. Annual. Flowers in July and August.

The milky juice, which abounds in this species, is applied to destroy warts, whence its common English name. It is likewise employed in some parts of the country as a remedy for the bite of the viper, as that of *E. capitata* and some other exotic species is for similar purposes in India and South America. Sheep will occasionally crop this plant notwithstanding its extreme acridity; but, if eaten in any quantity, the irritation it produces in the stomach and intestines usually proves fatal.

EUPHORBIA HIBERNA. *Irish Spurge.* TAB. **1228.**

Leaves and bracteas subcoriaceous, elliptical, entire. Umbel 5- to 6-stalked. Glands of the involucrum 4, kidney-shaped with intermediate rounded lobes. Capsules muricated with warts, not hairy. Seeds obovate, smooth, (blackish-brown).

Euphorbia Hiberna, *E. B.* 1337. *Smith* IV. 67. *Lindley* 221. *Hooker ed.* 2. 381. *ed.* 3. 387. *ed.* 4. 326. *Macreight* 204.

In England rare; found between Feversham and Sittingbourne in Kent. Not unfrequent in hedges and thickets in the south of Ireland. Stem unbranched, about 2 feet high. Leaves between membranous and coriaceous, obovate, the upper ones sometimes rather acute; subpubescent, deep-green. A few solitary peduncles often spring from the axils of the upper leaves in the more luxuriant specimens. Perennial. Flowers in June.

"While botanizing in the south of Ireland, Mr. W. Christy learned from Dr. Taylor, that this plant is extensively used by the peasantry of Kerry for poisoning, or rather stupifying, fish; in the same manner as the exotic *E. piscatoria*. So powerful are its qualities, that a small creel or basket filled with the bruised plant, suffices to poison the fish for several miles down a river." Brit. Flora.

EUPHORBIA PLATYPHYLLA. *Broad-leaved Warted Spurge.* TAB. **1229.**

Leaves membranaceous, obovato-lanceolate, acute, finely serrulated, hairy beneath. Bracteas cordate. Umbel of about 5 stalks. Capsule warted. Seeds obovate, smooth, shining, (brownish).

Euphorbia platyphylla, *E. B.* 333. *Smith* IV. 64. *Lindley* 221. *Hooker ed.* 2. 381. *ed.* 3. 387. *ed.* 4. 326. *Macreight* 204.

Our figure represents a small specimen, when it becomes *E. stricta* of Linnæus. Found in corn-fields near Henfield, Sussex, and in several other places in the southern and middle counties of England. A foot or more in height, seldom branched, somewhat glaucous, more or less hairy, or smooth. Umbel rarely 3- or 4-stalked: solitary peduncles occasionally spring from the axils of the uppermost leaves. Capsule sometimes rather hairy. Annual. Flowers in July and August.

EUPHORBIA PILOSA. *Hairy Spurge.* TAB. **1229*.**

Leaves sessile, ovato-lanceolate, entire or finely serrated, hairy be-

neath. Bracteas elliptical, glabrous, entire. Umbel (mostly) 5-stalked. Glands of the involucrum 4, transversely oval, with intermediate rounded lobes. Capsules minutely warted, hairy. Seeds obovate, glossy.

Euphorbia pilosa, *E. B. Supp.* 2787. E. pilosa, *β. Hooker ed.* 3. 388. *ed.* 4. 326. *Macreight* 204.

Plentiful in a lane and wood near Prior Park, Bath, where Mr. Babington considers it truly wild. Stems 2 or 3 feet high, reddish, smooth, naked below. Leaves sometimes with a few minute serratures near the apex. Several scattered solitary peduncles usually arise from the axils of the upper leaves. Glands of the involucrum yellow. Germen covered with slightly prominent purple spots, from each of which, as it increases in age, a pellucid hair is produced, so as to cause the nearly ripe capsule to appear shaggy. Perennial. Stems or branches biennial. Flowers in June.

EUPHORBIA CORALLOIDES. *Coral-like Hairy Spurge.* TAB. **1229***

"Leaves broadly lanceolate, minutely serrated at the apex, villose. Universal bracteas ovato-oblong; partial ones ovate; all villose. Umbel consisting of 5 branches. Glands of the involucrum 4, roundish. Capsules nearly smooth, woolly. Seeds obovate, minutely punctate and reticulato-rugose."

Euphorbia coralloides, *Linn. E. B. Supp. new series* 2837. E. pilosa, *Hooker ed.* 2. 382. (*exclud. syn. Reichenb.*) E. pilosa, *α. Hooker ed.* 3. 388. *ed.* 4. 326. *Macreight* 204.

Abundant in hedges at Slinfold, Sussex, where it was first noticed by W. Borrer, Esq., about thirty-five years since, who supposes it might have been introduced by Mr. Manningham, the friend of Dillenius, and formerly rector of that parish. Distinguished from *E. pilosa* by its different habit, wide-spread umbel, hairy and differently formed bracteas, wartless woolly capsules, and rugose-reticulated, instead of smooth seeds. Probably only biennial. Flowers in July.

*** *Glands of the involucrum pointed or angular, mostly crescent-shaped. Cotyledons linear.*

EUPHORBIA ESULA. *Leafy-branched Spurge.* TAB. **1230.**

Leaves membranaceous, oblongo-lanceolate, subserrated toward the apex. Bracteas cordate. Umbel many-stalked. Glands of the involucrum with 2 horns. Germen glabrous. Seeds obovate, smooth, not shining, (greyish-brown).

Euphorbia Esula, *E. B.* 1399. *Smith* IV. 65. *Lindley* 221. *Hooker ed.* 2. 382. *ed.* 3. 388. *ed.* 4. 327. *Macreight* 204.

Grows in shady woods about Edinburgh, and at Slinfold, Sussex. Leaves bluntish, muricated, entire or with a few roughish serratures toward the point. Umbel generally more than 6-stalked. Several scattered peduncles arise from the axils of the upper leaves. Perennial. Flowers in July.

EUPHORBIA Cyparissias. *Cypress Spurge.* Tab. **1231**.

Leaves membranaceous, glabrous, linear, entire. Bracteas cordate. Umbel many-stalked. Glands of the involucrum crescent-shaped. Germen roughish. Seeds obovate, smooth, not shining, (greyish-brown).

Euphorbia Cyparissias, *E. B.* 840. *Smith* IV. 66. *Lindley* 221. *Hooker ed.* 2. 382. *ed.* 3. 388. *ed.* 4. 327. *Macreight* 204.

This pretty Spurge is one that, like *E. Esula* and several other species, manifests by its sparing distribution in a few localities a claim to naturalization, but which cannot be regarded as indigenous. Woods and thickets seem to be its favourite habitats, and it has been found in Staffordshire, Bedfordshire and Northumberland. Creeps rapidly by the root, sending up numerous tufted stems, from a foot to 18 inches high, very much branched, and thickly set with slender, linear, almost setaceous, somewhat glaucous leaves; by which it is at once distinguished. Leaves of the flowering branches a little broader, approaching to lanceolate. Inflorescence yellowish; many scattered peduncles often developed below the terminal umbel. Perennial. Flowers in June and July.

One of the most ornamental of the herbaceous species; well adapted to the decoration of rock-work, old walls, and ruins, but far too obtrusive for admission to the parterre.

EUPHORBIA Paralias. *Sea Spurge.* Tab. **1232**.

Leaves coriaceous, generally imbricated, concave, glaucous, smooth, entire; upper ones obovato-lanceolate; lower linear-lanceolate. Bracteas cordate, concave. Umbel about 5-stalked. Glands of the involucrum 5, somewhat crescent-shaped and eroded. Germen wrinkled. Seeds roundish-obovate, nearly smooth, (cinereous).

Euphorbia Paralias, *E. B.* 195. *Smith* IV. 63. *Lindley* 222. *Hooker ed.* 2. 382. *ed.* 3. 389. *ed.* 4. 327. *Macreight* 204.

A native of the sandy sea-coasts of the south of England and in Ireland, but not of frequent occurrence. Stems about a foot high, tufted, rather woody below. Whole plant glaucous. Leaves rather fleshy, densely imbricated on the young shoots. Glands deep orange-colour. Perennial. Flowers in August and September.

EUPHORBIA Portlandica. *Portland Spurge.* Tab. **1233**.

Leaves membranaceous, obovato-lanceolate, submucronate. Bracteas triangular-cordate. Umbel about 5-stalked. Glands of the involucrum 4, crescent-shaped, with 2 long horns. Capsule rough at the angles. Seeds dotted, (whitish).

Euphorbia Portlandica, *E. B.* 441. *Smith* IV. 62. *Hooker ed.* 2. 382. *ed.* 3. 389. *ed.* 4. 327. *Macreight* 204. E. segetalis *β.* maritima, *Lindley* 222.

Found on the sandy sea-shores of the south and west of England, and in several places around the Irish Sea. About a span high. Stem smooth, shrub-like, reddish. Uppermost leaves generally pro-

ducing a few peduncles from their axils, and the lower ones several barren branches. Fruit smooth, except at the angles which are rough with sharp points. Perennial. Flowers in August.

Unknown on the continent, unless a variety of *E. segetalis*.

EUPHORBIA EXIGUA. *Dwarf Spurge.* TAB. **1234.**

Leaves rather rigid, linear-lanceolate, acute, or retuse and mucronate, entire, smooth. Bracteas resembling the leaves. Umbel of 3 principal stalks. Glands of the involucrum with 2 very long horns. Capsules nearly smooth. Seeds obovato-cylindrical, wrinkled, (whitish or ash-coloured,) not glossy.

Euphorbia exigua, *E. B.* 1336. *Smith* IV. 60. *Lindley* 222. *Hooker ed.* 2. 383. *ed.* 3. 389. *ed.* 4. 328. *Macreight* 204.

Frequent in corn-fields, especially on a light soil. A weak and slender-growing plant, seldom more than 5 or 6 inches high; the stem simple, or branched from the base. Umbel occasionally with 5 stalks. Seeds nearly 4-cornered. Annual. Flowers in July.

EUPHORBIA PEPLUS. *Petty Spurge.* TAB. **1235.**

Leaves membranaceous, broadly obovate, tapering into a petiole, entire, smooth. Bracteas ovate. Umbel (mostly) 3-stalked. Glands of the involucrum crescent-shaped, the horns very long. Germen wrinkled and scabrous; each of its lobes with a double-winged keel. Seeds obovato-cylindrical, dotted, (greyish-white,) not glossy.

Euphorbia Peplus, *E. B.* 959. *Smith* IV. 60. *Lindley* 222. *Hooker ed.* 2. 383. *ed.* 3. 389. *ed.* 4. 328. *Macreight* 204.

Abundant as a weed on all soils. Leaves deep-green. Umbel rather diffuse, rarely with only two stalks. Glands of the involucrum yellow, truly crescent-shaped with the horns much prolonged. Annual. Flowers in July and August.

It is less acrid than several of our native species, and its seeds are prescribed as a cathartic in some parts of the continent.

EUPHORBIA LATHYRIS. *Caper Spurge.* TAB. **1236.**

Leaves somewhat coriaceous, oblongo-lanceolate, cordate at the base, entire, smooth. Bracteas cordate, acuminate. Umbel mostly 4-stalked. Glands of the involucrum bluntly lunate. Germen smooth. Seeds obovate, truncate at the base, rough, (brown).

Euphorbia Lathyris, *E. B.* 2255. *Smith* IV. 61. *Lindley* 222. *Hooker ed.* 2. 383. *ed.* 3. 389. *ed.* 4. 328. *Macreight* 204.

Met with occasionally in dry woods and thickets in several parts of the kingdom, but scarcely indigenous or even naturalized. Stem 3 feet high, glaucous, purplish-red, smooth, as is the whole plant. Leaves dark-green, glaucous, pointing 4 ways, sometimes tinged like the stem with purple. Umbel rarely 2- or 3-stalked. Biennial. Flowers in June and July.

A stately and ornamental plant, long cultivated in our gardens on

account of its fruit which is often pickled as a substitute for capers, resembling them in size and appearance and somewhat in their pungent flavour. In a recent state it is highly acrid; but the process of long steeping in salt and water and afterwards in vinegar, probably neutralizes the active principle, or so far lessens its virulence, as to render it inert in the quantity of this condiment usually eaten. In North America, where it has been introduced from Europe, it has received the name of Mole Plant, and it is said that moles never disturb the ground where it grows.

EUPHORBIA AMYGDALOIDES. *Wood Spurge.* TAB. **1237.**

Leaves subcoriaceous, broadly lanceolate, attenuated at the base, entire, hairy beneath. Bracteas perfoliated. Umbel about 6-stalked. Glands of the involucrum crescent-shaped. Capsules minutely dotted. Seeds roundish-ovate, smooth, (brown,) not glossy.

Euphorbia amygdaloides, *E. B.* 256. *Smith* IV. 68. *Lindley* 223. *Hooker ed.* 2. 383. *ed.* 3. 389. *ed.* 4. 328. *Macreight* 204. E. sylvatica, *Linn.*

Common in woods and thickets. A bushy plant with red, almost shrubby stems. Whole plant rather downy and soft to the touch. Leaves more membranous than coriaceous. In flowering the branches grow to at least twice their original length. Umbel truly 5-stalked, but generally more or less confounded with the inferior peduncles. Inflorescence yellow. Perennial. Flowers in March and April.

A variety of this species with variegated leaves is occasionally seen in gardens.

EUPHORBIA CHARACIAS. *Red Shrubby Spurge.* TAB. **1238.**

Leaves coriaceous, linear-lanceolate, acute, attenuated at the base, entire, pubescent. Bracteas connate or perfoliate. Umbel many-stalked. Glands of the involucrum lunate. Germen woolly. Seeds oblongo-ovate, smooth, (blackish).

Euphorbia Characias, *E. B.* 442. *Smith* IV. 68. *Lindley* 223. *Hooker ed.* 2. 383. *ed.* 3. 390. *ed.* 4. 328. *Macreight* 204.

Occasionally met with in woods and hedges, but probably only as an outcast or wanderer from the garden. Stems about 3 or 4 feet high, brownish, pubescent. Leaves deep-green, very soft to the touch. Umbel crowded, with many inferior peduncles. Inflorescence yellowish; but the glands of the involucrum are of a dark-red or purple colour, as are sometimes the stamens. Capsule when ripe nearly smooth. A shrub. Flowers in March and April.

Needwood Forest in Staffordshire is named in most catalogues as a wild habitat of this handsome Spurge, but its naturalization even is doubtful, and it is probable we owe its introduction, together with that of other species of Euphorbia that are only of occasional or local occurrence, to the cathartic and stimulant properties for which the whole genus was formerly highly prized in medicine, but of which the knowledge of milder and safer remedies has long since occasioned the disuse.

Genus CCCCLVIII. CALLITRICHE. *Water-Star-Wort.*

Nat. Order. Callitrichaceæ.

Gen. Char. *Flowers* naked; but with 2 opposite petaloid bracteas.—*Barren flower. Anther* 1-celled, opening transversely.—*Fertile flower. Styles* 2, subulate. *Germen* 4-lobed, lobes laterally compressed, indehiscent, with 4, one-seeded cells.

Small aquatic plants, with opposite, entire leaves, and minute axillary flowers. Natives of still waters in Europe and North America. Lakes, ponds, and ditches are preserved in a wholesome state by the vegetation of plants of this description.

CALLITRICHE verna. *Vernal Water-Star-Wort.* Tab. **1239**.

Leaves 3-ribbed, the uppermost crowded, obovate, petiolate. Fruit-bearing peduncles very short, with 2 bracteas at the base. Capsule regularly tetragonal; lobes bluntly keeled.

Callitriche aquatica, *E. B.* 722. C. verna, *Linn. Smith* I. 10. *Lindley* 243. *Hooker ed.* 2. 383. *ed.* 3. 390. *ed.* 4. 328. *Macreight* 80.

Abundant in ponds, ditches, and slow-flowing streams. Upper leaves aggregated in the form of a star, floating, oval-lanceolate, 3-ribbed; lower ones in distant pairs, single ribbed, linear-lanceolate, chiefly bearing the flowers in their axils. Flowers sometimes hermaphrodite; if not, the barren and fertile opposite to each other on the same plane. Bracteas (petals of some authors) membranaceous, white. Fruit apparently sessile. Annual. Flowers in April and May.

The plant varies much in the form of the leaves and likewise in habit, according to the depth of the water and other circumstances.

CALLITRICHE pedunculata. *Pedunculated Water-Star-Wort.* Tab. **1239***.

Leaves all submerged, linear, obtuse, single-ribbed, sessile. Fruit-bearing peduncles elongated, without any bracteas at the base. Capsule regularly tetragonal; its lobes bluntly keeled.

Callitriche autumnalis, *E. B. Supp.* 2606, (*excl. the syn.*). *Hooker ed.* 2. 384. *ed.* 3. 390. *ed.* 4. 329. *Macreight* 80.

Found in a ditch at Amberley, Sussex, growing at the bottom of deep water, and probably not uncommon. The sessile, linear leaves, stalked capsule, and the absence of the petaloid bracteas, appear to form sufficient distinction between this and the preceding; but the varieties of *C. verna* are so numerous that we cannot avoid the suspicion that both the present plant and *C. autumnalis* may hereafter be found to belong to them. Annual. Flowers in June.

CALLITRICHE AUTUMNALIS. *Autumnal Water-Star-Wort.* TAB. **1239****.

Submerged. Leaves sessile, single-ribbed, linear, abrupt and notched at the apex. Fruit-bearing peduncles very short, without bracteas at the base. Capsule irregularly tetragonal; its lobes broadly and acutely winged at the back.

Callitriche autumnalis, *Linn. E. B. Supp.* 2732. *Smith* I. 10. *Lindley* 243. *Hooker ed.* 2. 384. *ed.* 3. 390. *ed.* 4. 329. *Macreight* 81. C. aquatica γ. *E. B.* 722, (small figure).

Not unfrequent in ditches and ponds about London. Well distinguished from *C. verna* at first sight by its upper leaves never forming the floating star-like summits which terminate the branches of that species. Leaves always sessile and linear, but rather attenuated towards the apex, which is, however, abrupt, with an acute notch. Fruit dark-brown, the lobes compressed and loosely cohering, with broad, wavy, and almost chaffy margins, so much dilated as to conceal the short pedicel; one or two of the lobes often abortive. Annual. Flowers from June to October.

GENUS CCCCLIX. ZANNICHELLIA. *Horned-Pond-Weed.*

Nat. Order. NAIADACEÆ.

GEN. CHAR. *Barren flower* naked; a single stamen inserted at the base of the fertile flower.—*Fertile flower. Perianth* campanulate. *Germens* 2 to 6. *Stigmas* dilated. *Capsules* nearly sessile, compressed, gibbous, externally crenulated, 1-seeded.

Aquatic plants with opposite linear leaves and minute axillary flowers. Natives of ditches, ponds, and slow streams in Europe and North America. The British species is liable to so much variation in the number and proportion of the floral organs as well as in mode of growth, that it is very doubtful whether the exotic ones which have been described are really distinct.

ZANNICHELLIA PALUSTRIS. *Common Horned-Pond-Weed.* TAB. **1240.**

Anther 4-celled. Stigmas entire.

Zannichellia palustris, *E. B.* 1844. *Smith* IV. 70. *Lindley* 251. *Hooker ed.* 2. 384. *ed.* 3. 390. *ed.* 4. 329. *Macreight* 224.

Not uncommon in ditches and standing waters. Stems long, filiform, branched. Leaves narrow, grass-like, acute, sometimes notched at the point. Bracteas axillary, membranaceous, bearing 2 flowers; the sterile one consisting of a single stamen with a long white filament and a 4-, rarely 2-celled anther; the fertile one, rising above

the base of the other, has an oblique campanulate perianth or calyx, usually containing 4 pistils, each terminating in a peltate or rather cordate dilated stigma. Annual. Flowers about August.

The stems usually float beneath the surface of the water, but rise in the flowering season so as to perfect the flowers above it.

Order II. DIANDRIA.

Callitriche, though generally monandrous, has occasionally 2 stamens. *Carex* in the following order is sometimes diandrous.

Order III. TRIANDRIA.

Genus CCCCLX. TYPHA. *Cat's-Tail. Reed-Mace.*

Nat. Order. Typhaceæ.

Gen. Char. *Flowers* collected into very dense, cylindrical spikes or catkins.—*Barren flowers* terminal. *Calyx* 3-leaved, obsolete, chaff-like. *Stamens* 3, united by the bases of the filaments (monadelphous).—*Fertile flowers* below the barren ones. *Calyx* obsolete, hair-like. *Fruit* pedicellate, surrounded at the base by hairs resembling a pappus (the obsolete calyx).

Water plants with creeping rhizomæ, jointless erect stems, and rigid, alternate, ensiform, somewhat sheathing leaves. Inflorescence always terminal, club-like, (spadiciform). Chiefly belonging to Europe and North America.

TYPHA latifolia. *Great Cat's-Tail or Reed-Mace.* Tab. **1241**.

Leaves linear, nearly plane. Sterile and fertile catkins continuous. Receptacle hairy.

Typha latifolia, *E. B.* 1455. *Smith* IV. 71. *Lindley* 247. *Hooker ed.* 2. 385. *ed.* 3. 391. *ed.* 4. 329. *Macreight* 244.

Frequent in pools, ditches and on the margins of slow streams, growing in the water. Rhizoma sending down long cylindrical fibres that penetrate deeply into the mud. Stem 4 to 6 feet high, simple, solid, smooth, leafy at the bottom. Leaves erect, nearly as tall as the stem, distichous, nearly an inch broad, smooth, slightly convex beneath. Catkins very long, continuous; the *sterile* one terminal, with 1 or 2 membranaceous bracteas, yellow, the anthers 2, 3, or 4 together; the *fertile* one greenish-brown. Perennial. Flowers in July and August.

The leaves are much used by coopers, who put them between the staves of their casks to prevent leakage; and the pollen, which is highly inflammable, is collected in large quantities for the makers of fire-works.

TYPHA ANGUSTIFOLIA. *Lesser Reed-Mace.* TAB. **1242.**

Leaves linear, channeled below. Sterile and fertile catkins a little distant from each other. Receptacle chaffy.

Typha angustifolia, *E. B.* 1456. *Smith* IV. 72. *Lindley* 247. *Hooker ed.* 2. 385. *ed.* 3. 391. *ed.* 4. 330. *Macreight* 244.

Less common than the preceding species in similar situations, and often accompanying it. It is well distinguished at first sight by the narrowness of its leaves and catkins, and by the bare space always observable between the latter. The leaves, though flat at the upper part, are channeled below and almost semicylindrical; and the stamens are intermingled with chaffy scales at the base, instead of hairs as in *T. latifolia.* Perennial. Flowers in July.

TYPHA MINOR. *Dwarf Reed-Mace.* TAB. **1243.**

Leaves linear, setaceous, convex beneath. Sterile and fertile catkins a little distant; the latter elliptical, and sometimes interrupted. Receptacle naked.

Typha minor, *E. B.* 1457. *Smith* IV. 73. *Lindley* 247. *Hooker ed.* 2. 385. *ed.* 3. 391. *ed.* 4. 339. *Macreight* 244. T. angustifolia, *β. Linn.* T. minima, *Willdenow.*

A doubtful native. Mr. Dandridge is said by Dillenius to have found it on Hounslow Heath, but it does not appear to have been met with in England by any botanist since his period. It is a native of several parts of the continent. Resembles the two preceding species in habit, but is much smaller; the stem being only about 12, or at most, 18 inches high, very slender, and the leaves scarcely a line in breadth. Catkins about an inch long; the fertile one often divided, as in one of our figures. Anthers seldom more than one to each filament (subsolitary), or rather the filaments are seldom monadelphous. Perennial. Flowers in July.

GENUS CCCCLXI. SPARGANIUM *Bur-Reed.*

Nat. Order. TYPHACEÆ.

GEN. CHAR. *Barren* and *fertile flowers* in separate, dense, spherical heads. *Calyx* 3-leaved. *Corolla* none. *Fruit* sessile, dry, 1-seeded; without bristles at the base.

Perennial aquatic herbs with round, leafy stems, linear leaves, and small flowers collected into many dense, globular heads, which are sessile and arranged in a terminal spike or panicle. The frequent companions of *Typha* in marshes and watery places, as on the shallow shores of lakes, pools, and rivers, throughout Europe and North America.

SPARGANIUM RAMOSUM. *Branched Bur-Reed.* TAB. **1244.**

Leaves triangular at the base, their sides concave. Common flower-stalk branched. Stigma linear.

Sparganium ramosum, *E. B.* 744. *Smith* IV. 74. *Lindley* 247. *Hooker ed.* 2. 385. *ed.* 3. 392. *ed.* 4. 330. *Macreight* 244. S. erectum, *Linn.*

Frequent in ditches and stagnant waters. Stem erect, 2 or 3 feet high, dividing at the top in many alternate, somewhat zigzag flowering branches. Root-leaves erect, very long, linear, triangular at the base; with their sides channeled, not flat. Stem-leaves few, shorter, sheathing at the base, not triangular. Sterile heads, numerous, occupying the upper ends of the branches; fertile ones, few, distant, below the others. Perennial. Flowers in July.

SPARGANIUM SIMPLEX. *Unbranched Upright Bur-Reed.* TAB. **1245.**

Leaves triangular at the base, their sides flat. Common flower-stalk simple. Stigma linear.

Sparganium simplex, *E. B.* 745. *Smith* IV. 75. *Lindley* 247. *Hooker ed.* 2. 385. *ed.* 3. 392. *ed.* 4. 330. *Macreight* 244. S. erectum, *β. Linn.*

Not unfrequent in ditches and watery places, especially on a gravelly soil, though less common than *S. ramosum*. It is a smaller plant than that species, and though once regarded as a variety, is sufficiently distinguished by the almost uniform simplicity of the flower-stem, and by the flat, instead of grooved or concave, sides of the leaves. The inflorescence is rather of a paler hue than in the last plant, especially the anthers. The lowermost head of flowers is usually stalked, and a single branch is sometimes, but rarely, extended in its stead. Perennial. Flowers in July.

SPARGANIUM NATANS. *Floating Bur-Reed.* TAB. **1246.**

Leaves floating, flat. Common flower-stalk simple. Head of sterile flowers mostly solitary, terminal. Stigma ovate, very short.

Sparganium natans, *E. B.* 273. *Smith* IV. 75. *Lindley* 248. *Hooker ed.* 2. 385. *ed.* 3. 392. *ed.* 4. 330. *Macreight* 244.

Abundant in lakes, ditches, and stagnant waters in the north of England and Scotland, but rare in the middle and southern counties. Leaves linear, narrow, long, thin and almost pellucid; flat, except at the base which is a little channeled and sheathing, but not keeled. Heads of flowers about 4; the uppermost one only, in general, stameniferous; the lowest on a short stalk. Perennial. Flowers in July and August.

GENUS CCCCLXII. CAREX. *Sedge. Carex.*

Nat. Order. CYPERACEÆ.

GEN. CHAR. *Flowers* collected into imbricated spikes. *Barren* and *fertile flowers* mostly in different spikes, sometimes associated in the same. *Barren spikes* always uppermost. *Bracteas* simple, 1-flowered. *Barren flower:* naked,

the bractea excepted. *Fertile flower : glumes* 2, united by their margins, urceolate. *Stigmas* 2 or 3. *Nut* triquetrous, inclosed by the hard, persistent glumes, (corolla of some bot.) which resemble a seed-vessel.

One of the most extensive genera of glumaceous plants, about 300 species being known, most of which are natives of the northern hemisphere. They chiefly inhabit wet and swampy soils, forming often the principal vegetation on the borders of pools, ditches, and the banks of rivers, and abounding in fens, marshes, and moist woods; a few species are found in dry situations, and among loose sand.

These plants resemble grasses in habit and foliage, but differ from them, as do the rest of the Cyperaceæ, in the structure of the seed, the embryo of which is contained within the albumen; in the stem being solid, angular, and free from nodes; and especially in the almost total absence of those nutritive qualities which are found in the leaves and seeds of the former tribe. The name of the genus has been whimsically derived from *careo*, to want, as indicative of the last character; but it may be likewise traced with equal probability from the Greek χειρω, to cut, in allusion to the sharp edges of the stem and rigid leaves of many species.

Although of little œconomical importance to man, being rarely eaten by cattle, the Carexes form a valuable series of plants under the dominion of nature. Seen but rarely in the mead or pasture, they occupy, almost exclusively, situations unfitted for the development of the succulent and foodful grasses which there abound. Their hard and durable roots form compact tufts in the spongy bog or morass, or on the shallow margins of the stagnant pool, gradually but inevitably extending their dominion, to elevate and give consistency to the surface of the former, and filling up the bed of the latter, until dry land appears; when, by slow degrees, they yield in their turn to the encroachments of a more valuable vegetation. Their agency is likewise conspicuous in consolidating the banks of rivers, exposed to the perpetual wear of tide and current, and in fixing the loose and drifting sand of the seashore to prevent its desolating the fertile lands of the adjoining country. In these essential, though often little appreciated, benefits to man, the Carexes are associated with rushes, certain coarse grasses, and other plants that are generally regarded by him as worthless, and indicative of that very barrenness which is gradually, through their ministry, undergoing the change to fertility and abundance.

The genus is divided into several sections, dependent upon

the number of stigmas and the arrangement of the barren and fertile flowers. Upon the former character, Nees von Esenbeck has founded the 2 subgenera, Vignea, and Carex proper.

Subgenus 1. VIGNEA. *Stigmas 2.*

* *Spike simple, solitary.*

† *Dicœcious (fertile and barren flowers on separate plants).*

CAREX DIOICA. *Creeping separate-headed Carex.* Tab. **1247.**

Base creeping. Stem and leaves nearly smooth. Spike simple, diœcious. Fruit ovate, shortly acuminated, rough at the margins upwards; mostly ascending.

Carex dioica, *E. B.* 543. *Smith* IV. 77. *Lindley* 284. *Hooker ed.* 2. 386. *ed.* 3. 392. *ed.* 4. 330. *Macreight* 252.

Not unfrequent in spongy bogs. Stems 5 to 6 inches high, slender. Leaves somewhat triangular, very narrow, smooth. Fertile and barren spikes from separate roots; both linear when in flower, but the fertile one becoming more or less ovate as the fruit ripens. Perennial. Flowers in May and June.

CAREX DAVALLIANA. *Prickly separate-headed Carex.* Tab. **1248.**

Root tufted. Stem and leaves rough. Spike simple, diœcious. Fruit ovato-lanceolate, much acuminated, rough at the margins above; deflexed.

Carex Davalliana, *E. B.* 2123. *Smith* IV. 78. *Lindley* 284. *Hooker ed.* 2. 386. *ed.* 3. 392. *ed.* 4. 331. *Macreight* 252.

Rare. Found at Lansdown near Bath, on the slope of a hill on which there is a clump of firs. Said likewise to be a native of subalpine bogs in Scotland and Ireland, but the habitats recorded there are doubtful. It has been sometimes regarded as a variety of the preceding species, but the difference in habit, and the longer, completely recurved fruit, will scarcely admit of the supposed alliance. Stem 6 inches to a foot in height. Perennial. Flowers in June.

†† *Androgynous (fertile and barren flowers in the same spike).*

CAREX PULICARIS. *Flea Carex.* Tab. **1249.**

Spike simple; the upper half with barren (stameniferous) flowers, the lower half with fertile (pistil-bearing) ones. Fruit spreading or deflexed, oblongo-lanceolate, acuminated, glossy.

Carex pulicaris, *E. B.* 1051. *Smith* IV. 78. *Lindley* 284. *Hooker ed.* 2. 386. *ed.* 3. 392. *ed.* 4. 331. *Macreight* 252.

Frequent in spongy and muddy bogs. Root tufted. Stem 3 inches to a span in height, sheathed at the lower part with several slender, setaceous, smooth, spreading leaves. Spike resembling at its first appearance the barren one of *C. dioica*, the fertile portion

only becoming lax afterwards, and the flowers deflexed as they advance to maturity. Fruit dark-brown, smooth, highly polished, giving the plant a singular and characteristic aspect which has obtained for it the name of Flea Carex. Perennial. Flowers in May and June.

*** Spike compound; spikelets androgynous.*

† Spikelets capitate. (Spike apparently simple).

CAREX INCURVA. *Curved Carex.* TAB. **1250.**

Stem smooth, obtusely angular. Leaves channelled. Spikelets collected into a roundish head, sterile at their extremity. Involucral bracteas membranaceous, shorter than the spikelets. Fruit broadly ovate, acuminated.

Carex incurva, *E. B.* 927. *Smith* IV. 85. *Lindley* 285. *Hooker ed.* 2. 386. *ed.* 3. 393. *ed.* 4. 331. *Macreight* 252. C. juncifolia, *Allioni.*

Met with on the sandy sea-shores of the north of Scotland. Runners creeping among the loose sand. Flowering stems 3 or 4 inches high, curving upwards. Leaves all radical, shorter than the stem, smooth. Head of flowers large, composed of several aggregate, sessile spikelets. Fruit very slightly notched at the point. Perennial. Flowers in June.

In alpine bogs on the continent, the stem growing erect, it has by some botanists been esteemed a different species, and is the C. juncifolia of *Allioni.*

†† Spikelets alternate; their uppermost flowers sterile.

CAREX ARENARIA. *Common Sea Carex.* TAB. **1251.**

Stem triangular. Leaves plane. Spikelets crowded; the lower ones nearly all fertile, the upper ones chiefly barren. Involucral bracteas membranaceous, the lowermost somewhat leafy. Fruit with a membranaceous wing, shorter than the bracteal scale.

Carex arenaria, *E. B.* 928. *Smith* IV. 85. *Lindley* 285. *Hooker ed.* 2. 386. *ed.* 3. 393. *ed.* 4. 333. *Macreight* 252.

Common in the loose sand of the sea-shore, which its long, creeping, root-like stems assist in binding, and not only prevent it from drifting into the interior, but collecting it into banks form powerful ramparts against the future inroads of the ocean. Flowering stems erect, about a foot high, naked above, rough, acutely triangular. Leaves erect, sheathing the base of the stem, rough on the edges; tapering to a sharp point. Spikelets nearly monoicous, crowded more or less into an oblong head. Fruit ovate, acute, ribbed, with a green membranous wing on each side. Perennial. Flowers in June.

The roots or runners of this species possess considerable demulcent and alterative properties, and are employed on the continent as a substitute for Sarsaparilla.

CAREX INTERMEDIA. *Soft Brown Carex.* TAB. **1252.**

Stem triangular. Leaves plane. Spikelets crowded into an oblong,

dense head; the inferior and terminal ones mostly fertile; the intermediate barren. Involucral bracteas membranaceous, the lowermost somewhat leafy. Fruit acutely margined, longer than the bracteal scale.

Carex intermedia, *E. B.* 2042. *Smith* IV. 86. *Lindley* 286. *Hooker ed .2.* 387. *ed.* 3. 393. *ed.* 4. 333. *Macreight* 252.

Not unfrequent in marshes and wet meadows. A creeping and deeply rooting species, throwing up its flowering stems to the height of 12 to 18 inches; they are sharply triangular with unequal sides, naked, except toward the base, which is clothed with a few, nearly upright, flattish leaves. Spike composed of numerous ovate spikelets, of which 2 or 3 of the lowermost and about the same number of the uppermost are almost entirely fertile, while the remaining intermediate ones are nearly as completely barren; the barren flowers in both instances terminating the spikelet. Fruit large, and less distinctly winged than gradually flattened towards the margin. Perennial. Flowers in June.

CAREX DIVISA. *Bracteated Marsh Carex.* TAB. **1253.**

Base creeping. Spikelets few, mostly clustered into a dense and somewhat ovate head; the lowermost solitary, sometimes compound, with a leafy, erect involucral bractea at its base; all terminating with barren flowers. Fruit roundish-ovate, acutely angular, not spreading.

Carex divisa, *E. B.* 1096. *Smith* IV. 87. *Lindley* 286. *Hooker ed.* 2. 387. *ed.* 3. 393. *ed.* 4. 333. *Macreight* 253.

Grows in marshy places, chiefly near the sea in the eastern counties of England. Stem weak, about a foot high. Leaves narrow, erect. Spikelets few, irregularly clustered. Perennial. Flowers in May and June.

CAREX MURICATA. *Greater Prickly Carex.* TAB. **1254.**

Spike oblong, formed of 4 to 6 approximate spikelets. Fruit ovato-acuminate, with acute, rough margins; spreading.

Carex muricata, *E. B.* 1097. *Smith* IV. 88. *Lindley* 286. *Hooker ed.* 2. 387. *ed.* 3. 393. *ed.* 4. 334. *Macreight* 253. C. spicata, *Hudson and Lightfoot.*

Not uncommon in moist pastures and shady places, especially on a gravelly soil, growing in tufts and throwing up its slender, wiry stems from 1 to 2 feet high. Leaves flattish, bright-green, taller than the stems, rough upon the edges and keel. Spike 1 or 2 inches long, consisting of about 6 roundish, crowded spikelets, the lowermost of which are often compounded. Involucral bracteas ovate, the lowest ending in a narrow, rough, leafy point. Fruit spreading every way, and rendering the mature spike prickly to the touch, owing to its rough edges and deeply cloven beaks; yellowish-brown, broad, rather large. Perennial. Flowers in May and June.

CAREX DIVULSA. *Grey Carex.* TAB. **1255.**

Spike elongated, lax. Spikelets 5 or 6, the lower ones rather re-

mote. Fruit ovate, acute, rough at the point, with blunt margins; erect.

Carex divulsa, *E. B.* 629. *Smith* IV. 89. *Lindley* 286. *Hooker ed.* 2. 387. *ed.* 3. 394. *ed.* 4. 334. *Macreight* 253. C. muricata, *β. Wahlenberg.* C. canescens, *Hudson.*

Found in similar habitats with the last, preferring generally a shady situation. Its claim to rank as a separate species is very doubtful. The paler hue, and more distant spikelets afford but very equivocal characters of distinction, and it is to be feared no other of more importance can be depended upon as permanent. Perennial. Flowers in May and June.

Unfortunately our figure has been taken from a young specimen, and therefore does not illustrate the most prominent feature noted under the above specific description.

CAREX VULPINA. *Great Rough Carex.* TAB. **1256.**

Stems triangular, the angles very acute. Leaves broad. Spikelets compound, collected into a crowded, subcylindrical spike. Fruit ovato-acuminate, plano-convex, angular; spreading.

Carex vulpina, *E. B.* 307. *Smith* IV. 90. *Lindley* 286. *Hooker ed.* 2. 387. *ed.* 3. 394. *ed.* 4. 334. *Macreight* 253.

Frequent in marshy meadows, wet shady places, and on the margins of ponds and ditches. Root forming thick tufts, sending up numerous erect, stout, rough stems, about 2 feet high; the angles of which are so acute as to cut the fingers of those who gather them incautiously. Leaves broad, their sheathing bases whitish and membranaceous. Involucral bracteas linear. Inflorescence greenish; variable as to the compactness or laxity of the spike, and in the spikelets being more or less compounded. Fruit pale, with a notched, lengthened beak, which is rough at the margin. Perennial. Flowers in June.

CAREX TERETIUSCULA. *Lesser Panicled Carex.* TAB. **1257.**

Stem roundish. Leaves narrow. Spikelets ovate, subcompound, forming a dense, oblong spike. Fruit plano-convex, ovate, with a tapering, notched, serrated beak.

Carex teretiuscula, *E. B.* 1065. *Smith* IV. 91. *Lindley* 286. *Hooker ed.* 2. 388. *ed.* 3. 394. *ed.* 4. 334. *Macreight* 253.

Found in bogs and watery meadows in various parts of the kingdom. Root never forming dense tufts. Stems 2 to 2½ feet high, triangular, but with the interstices convex so as to give it a rounded appearance, whence the specific name. Leaves rather glaucous, narrow. Spike 1 to 2 inches in length, brown. Involucral bracteas ovate, membranaceous, the lowest generally foliaceous and elongated. Perennial. Flowers in May and June.

It has sometimes been regarded as a variety of the next species *C. paniculata*, but is very much smaller in all its parts, and is otherwise sufficiently distinct.

CAREX PANICULATA. *Greater Panicled Carex.* TAB. **1258.**

Stem sharply triangular. Leaves broad. Spikelets ovate, compounded; forming a somewhat lax panicle. Fruit convex on the outside, margined above, with a serrated, slightly cloven beak.

Carex paniculata, *E. B.* 1064. *Smith* IV. 92. *Lindley* 286. *Hooker ed.* 2. 388. *ed.* 3. 394. *ed.* 4. 334. *Macreight* 253.

Not uncommon in spongy bogs, and shady, watery places, where its dense fibrous roots form huge and firm tufts, raised high above the original soil, and in process of time change the useless and unstable swamp into a substantial, though coarse, meadow. Stems 3 to 5 feet high, triangular; the angles very rough and sharp; the insterstices striated, flat, never rounded as in the preceding species. Leaves broad, rough on the edges and keel. Panicle more or less spreading or compact. Fruit with the base broad, and rather truncated, as shewn in fig. 1 on our plate, where it is contrasted with the narrow stipitate fruit of *C. teretiuscula* in fig. 2. Perennial. Flowers in June.

††† *Spikelets alternate; their lowermost flowers sterile.*

CAREX STELLULATA. *Little Prickly Carex. Star-Headed Sedge.* TAB. **1259.**

Spikelets few (3 or 4), roundish, rather distant, sterile at the base. Fruit ovate, much attenuated, acute, angular, rough at the margin; spreading.

Carex stellulata, *E. B.* 806. *Smith* IV. 80. *Lindley* 284. *Hooker ed.* 2. 388. *ed.* 3. 395. *ed.* 4. 331. *Macreight* 253.

Common in marshes and watery places on heaths and moors. Stem slender, naked upwards, 6 inches to a foot in height. Leaves flat, keeled, roughish at the points; about as long as the stem. Spikelets at nearly equal distances; their fertile flowers terminal, more numerous than the barren ones. Fruit spreading in every direction like the rays of a star, whence the specific name. Perennial. Flowers in May and June.

CAREX LEPORINA. *Hare's-Foot Carex.* TAB. **1259*.**

Spikelets 3, rarely 4, ovate, contiguous. Fruit elliptical, rostrate, plano-convex, nerved on both sides; with a scariose, emarginate, finally entire orifice; scarcely longer than the ovate, obtuse bracteal scale.

Carex leporina, *E. B. Supp. new series* 2815. *Hooker ed.* 4. 332. *Linn. Flor. Lapp. ed.* 2. 261.

Discovered in August 1836 by Messrs. Dickie and Clark, growing upon rocks on the west side of Loch-na-gar, Scotland. Root fibrous. Stem slender, 4 to 8 inches high, smooth, rarely rough below the spike. Leaves a line in breadth, shorter than the stem, keeled, rough at the margins upwards. Spikelets brown, the terminal one largest, the others sometimes all fertile. Involucral bracteas broad, ovate, obtuse; the lowest aristate, rarely foliaceous and longer than

the spikelet. Fruit smooth, the slightly bifid mouth in maturity appears entire. Bracteal scales scariose at the margin. Seed elliptic, plano-convex, pale-yellow. Perennial. Flowers in July.

CAREX CURTA. *White Carex.* TAB. **1260.**

Spikelets 5 to 7, oval, rather distant. Involucral bracteas minute. Fruit broadly ovate, compressed, acute, smooth, faintly striated; about as long as the ovate, membranous bracteal scales.

Carex curta, *E. B.* 1386. *Smith* IV. 81. *Lindley* 285. *Hooker ed.* 2. 388. *ed.* 3. 395. *ed.* 4. 332. *Macreight* 253.

Bogs and watery meadows in several parts of the kingdom yield this species, but it is not of frequent occurrence. About a foot high. Leaves somewhat glaucous, nearly as high as the stem. Spikelets elliptical, many-flowered, pale; the uppermost approximate, the lower ones rather remote. Bracteal scales membranaceous, shining, whitish, with a green rib, rather longer than the fruit. Perennial. Flowers in June.

The pale whitish, almost silvery, spikelets superficially distinguish this from the other species which resemble it in habit.

CAREX ELONGATA. *Elongated Carex.* TAB. **1261.**

Spikelets numerous, oblong, lax, rather distant. Involucral bracteas very minute. Fruit ovato-oblong, acuminate, plano-convex, spreading, longer than the bracteal scales; the point scarcely bifid, recurved.

Carex elongata, *E. B.* 1920. *Smith* IV. 82. *Lindley* 285. *Hooker ed.* 2. 389. *ed.* 3. 395. *ed.* 4. 332. *Macreight* 253.

A rare species, met with in marshes in the north of England, but hitherto only in two or three localities, as at Aldwark, Yorkshire, Over, Cheshire, and in Shropshire. Roots tufted. Stems 12 to 18 inches high, with 3 acute angles, rather rough as well as the leaves. Spikelets 7 to 14, brownish, the upper ones crowded. Fertile flowers most numerous. Fruit strongly ribbed. Perennial. Flowers in June.

CAREX OVALIS. *Oval-Spiked Carex.* TAB. **1262.**

Spikelets about 6, collected into an oval, more or less compact spike. Fruit ovato-acuminate, plano-convex, striated, with a broad membranous margin rough at the edge, the beak nearly entire; about the length of the acute lanceolate bracteal scale.

Carex ovalis, *E. B.* 306. *Smith* IV. 82. *Lindley* 285. *Hooker ed.* 2. 389. *ed.* 3. 395. *ed.* 4. 332. *Macreight* 253.

Common in marshes and watery places. Creeping at the base. Stems about a foot high, with 3 sharp, rough angles; often, but not always, hollow. Leaves sheathing the lower part of the stem and about equal to it in height, dark-green, narrow, roughish on the edges and keel. Spike brownish-green, rather glossy. Involucral bracteas at the base of the upper spikelets small and resembling the floral scales; the lowermost only leafy and about half as long as the

spike. Fruit almost concealed by the scales. Perennial. Flowers in June.

Variable as to the approximation of the spikelets, the lower ones in luxuriant specimens being more or less distant and spreading.

CAREX REMOTA. *Remote-flowered Carex.* TAB. **1263.**

Spikelets nearly sessile, solitary, very distant. Involucral bracteas leafy, rising higher than the stem. Fruit oblongo-ovate, acuminate, plano-convex, roughish at the margin upwards, longer than the bracteal scale, the beak very slightly cloven.

Carex remota, *E. B.* 832. *Smith* IV. 84. *Lindley* 285. *Hooker ed.* 2. 389, *ed.* 3. 396. *ed.* 4. 332. *Macreight* 253.

Not unfrequent in moist woods, hedges, and thickets, and sometimes on the borders of rivers, ponds, and ditches, but always preferring a shaded situation. Whole plant very slender, pale-green. Stem 12 to 18 inches high, triangular and rough in the upper part, smooth and roundish below. Leaves long and narrow, rough on the edge, channelled. Spikelets generally about 6 or 8, ovate, sterile at the base: 3 or 4 of the lowermost are very distant, and each of them accompanied by a very long, upright, leafy bractea reaching higher than the top of the stem; the upper spikelets are more approximated and have very short bracteas. Bracteal scales ovato-lanceolate, membranaceous and white at the margin, with a green or brownish keel which does not extend to the apex. Perennial. Flowers in June.

CAREX AXILLARIS. *Axillary-clustered Carex.* TAB. **1264.**

Lower spikelets in distant clusters. Involucral bracteas leafy; the lowermost only as long as the spike. Fruit oblongo-ovate, acuminate, longer than the bracteal scale, the beak deeply bifid.

Carex axillaris, *E. B.* 993. *Smith* IV. 84. *Lindley* 285. *Hooker ed.* 2. 390. *ed.* 3. 396. *ed.* 4. 333. *Macreight* 253.

Marshes, watery heaths, and ditch-banks are the habitats of this species, which is certainly not so rare, at least in the vicinity of the metropolis, as our Floras in general testify. Its resemblance at first sight to *C. remota* is such, that it might be readily passed over by the less curious observer for that more common species; its habit, however, is very different, the present being a much stronger and larger plant, with broader leaves and more turgid spikelets. The stem is more acutely triangular. The lower spikelets are never simple or solitary, but always clustered 3 or more together, each cluster springing from the axil of a leafy bractea, of which the lowest only is sufficiently long to reach the top of the stem. Bracteal scales with 2, close, green, generally rough ribs, reaching to the summit. Perennial. Flowers in June.

*** *Fertile and barren flowers in separate spikes or spikelets.*

† *Barren spikes solitary.*

CAREX PULLA. *Russet Carex.* TAB. **1265.**

Involucral bracteas leafy, not sheathing at the base. Spikes ovate, obtuse; the lower fertile one stalked. Scales oblong. Fruit elliptical, inflated, with a very short bifid beak; spreading.

Carex pulla, *Goodenough, E. B.* 2045. *Smith* IV. 104. *Lindley* 289. *Hooker ed.* 2. 396. *ed.* 3. 402. *Macreight* 253.

C. saxatilis, *Linn. Hooker ed.* 4. 337.

This pretty Sedge is only met with on the higher regions of the Scottish mountains, where it grows in boggy ground about the margins of springs and rivulets. Stem varying in different localities from 6 or 8 inches to 1 or 2 feet in height. Leaves nearly erect, flat, slightly keeled, sharply acuminate and triangular at the apex. Barren spike terminal, erect; fertile ones 2 or 3. Bracteal scales ellipticolanceolate, dark-chocolate-brown, shining. Fruit pale at first, dark-brown and glossy when ripe. Perennial. Flowers in June.

CAREX CÆSPITOSA. *Bog Carex.* TAB. **1266.**

Leaves mostly erect, narrow, linear. Involucral bracteas leafy, auricled at the base, not sheathing. Fertile spikes sessile, cylindrical, obtuse. Fruit elliptical, broad, compressed, with a very short entire beak.

Carex cæspitosa, *E. B.* 1507. *Lindley* 291. *Hooker ed.* 2. 396. *ed.* 3. 403. *ed.* 4. 335. *Macreight* 253. C. angustifolia, *Smith* IV. 127, according to Prof. D. Don.

Frequent in marshes and on wet pastures and heaths. The specific name probably refers to its partiality to a turfy soil, certainly not to its habit, which is never cæspitose according to the general acceptation of the term. It is one of the creeping, rather than tufted kinds. Stem a span to a foot in height. Leaves nearly as tall as the stem, linear, acute, rough on the edges and keel. Barren spike linear; fertile ones 2 or 3, short, obtuse. Bracteal scales black or dark-purple with a green midrib. Stigmas spreading. Fruit sessile. Perennial. Flowers in May and June.

CAREX RIGIDA. *Rigid Carex.* TAB. **1267.**

Leaves rigid, mostly recurved, broadly linear. Involucral bracteas leafy, auricled at the base, not sheathing. Fertile spikes subcylindrical, obtuse; the lowest one pedunculated. Fruit obovate, slightly stalked; the beak very short, entire.

Carex rigida, *Goodenough, E. B.* 2047. *Smith* IV. 116. *Lindley* 290. *Hooker ed.* 2. 396. *ed.* 3. 403. *ed.* 4. 336. *Macreight* 253.

A native of the most elevated mountains of Scotland and North Wales, especially about their summits. Creeping at the root. Stem ascending, mostly incurved, 3 to 6 inches high. Leaves rigid, rough on the edges and keel, somewhat glaucous. Barren spike rather ovate, short, blunt; fertile ones 2 or 3, the two upper sessile and approximate, the lower rather distant, on a short stalk. Bracteal scales dark-brown, paler on the margin and keel. Stigmas erect. Fruit attenuated at the base into a short stalk. Perennial. Flowers in June and July.

The broader and more rigid leaves, erect stigmas, and stalked fruit, form the chief distinctions between this and *C. cæspitosa*, of which several eminent native botanists are inclined to believe it a mere variety.

†† *Barren spikes sometimes 2 or more ; (mostly so in C. acuta).*

CAREX STRICTA. *Glaucous Straight-leaved Carex.* TAB. **1268.**

Leaves erect, straight, reticulated at the base. Involucral bracteas short, subfoliaceous, slightly auricled at the base, not sheathing. Fertile spikes nearly sessile, erect, imbricated, cylindrical, elongated ; often acuminate with barren flowers at the summit. Fruit elliptical, plane above, with a short bifid beak, subsessile.

Carex stricta, *E. B.* 914. *Smith* IV. 118. *Lindley* 291. *Hooker ed.* 2. 397. *ed.* 3. 403. *ed.* 4. 337. *Macreight* 253. C. cæspitosa, *Hudson—β. Lightfoot.*

Common in marshes. Creeps at the root, sending up its sharp, angular, erect stems to the height of about 2 feet. Leaves erect, narrow-linear, glaucous; their sheathing bases reticulated with filaments. Spikes long, erect, imbricated. Bracteal scales dark-brown. Fruit gradually acuminate, disposed upon the spikes in 8 rows. Perennial. Flowers in April and May.

The very erect habit will distinguish this species at a glance from those with which it is most likely to be confounded.

CAREX AQUATILIS. *Straight-leaved Water Carex. Long-spiked Mountain Carex.* TAB. **1268*.**

Stem smooth, obtusely triangular. Sheaths of the leaves never fibrous. Involucral bracteas very long, foliaceous, not sheathing. Fertile spikes nearly sessile, linear, elongated, attenuated below. Fruit roundish-obovate, with a very short entire point.

Carex aquatilis, *Wahlenberg ?—E. B. Supp.* 2758. *Hooker ed.* 3. 404. *ed.* 4. 336. *Macreight* 253. C. rigida, *β. Hooker ed.* 2. 397.

Common on the flat marshy spots of the table-lands among the mountains of Clova, Scotland, where it flourishes often to the exclusion of other plants. Stem 1 or 2 feet high. Leaves long, erect, acuminated, scarcely more than two lines broad, somewhat glaucous. Bracteas rising higher than the spikes. Fertile spikes 3 or 4, cylindrical ; the lower ones more or less pedunculated, often nearly 2 inches long. Perennial. Flowers in July and August.

Dr. Greville, who in company with Sir W. Hooker and others first noticed this plant, determined it, by comparison with a Lapland specimen, to be *C. aquatilis of Wahlenberg,* but accords with Dr. Graham in remarking upon the difference of its habitat and size in this country. The Lapland plant is described as growing in rivers and lakes, throughout the wooded portion of the alpine and subalpine districts, and as frequently attaining the height of a man ; whereas the British one is never seen off the naked and exposed table-land of the mountains, has never been found actually growing in the water, and is scarcely ever 2 feet high. It may eventually prove a distinct species.

CAREX ACUTA. *Slender-spiked Carex.* TAB. **1269.**

Stem acutely angular, scabrous. Involucral bracteas leaf-like, long, the base not sheathing. Spikes cylindrical, acuminate, slender, drooping when in flower; the fertile ones erect when in fruit. Fruit elliptical, with a bluntish, entire beak.

Carex acuta, *E. B.* 580. *Smith* IV. 119. *Lindley* 291. *Hooker ed.* 2. 397. *ed.* 3. 404. *ed.* 4. 336. *Macreight* 253. C. gracilis, *Curtis.*

Frequent on the banks of ditches, and in wet meadows and pastures, where it creeps widely at the root, and often rises to the height of 2 or 3 feet. Stem very sharply triangular, rough on the edges. Leaves rather broad, rough, a little glaucous. Fertile spikes 3 or 4, the upper ones generally terminated with barren flowers; barren ones mostly 2 or 3, drooping with the top of the stem. Perennial. Flowers in May.

SUBGENUS 2. CAREX. *Stigmas* 3.

* *Spike simple, solitary; androgynous.*

CAREX PAUCIFLORA. *Few-flowered Carex.* TAB. **1270.**

Spike simple, of few flowers; the uppermost flower barren. Fruit subulate, spreading; rather longer than the deciduous bracteal scales.

Carex pauciflora, *E. B.* 2041. *Smith* IV. 79. *Lindley* 284. *Hooker ed.* 2. 386. *ed.* 3. 392. *ed.* 4. 331. *Macreight* 255.

Not unfrequent on peat moors and bogs on the Highland mountains, likewise about Crag Lake, Northumberland. Stems ascending from the creeping base, 3 to 5 inches high, smooth, obscurely triangular; bearing at the lower part 2 or 3 setaceous, keeled, folded, smooth leaves. Spike composed of 4 to 6 flowers, of which the uppermost only is stameniferous. Scales lanceolate, pale-orange or rust-coloured, deciduous. Fruit of the same hue, tapering, somewhat triangular, furrowed, spreading, at length deflexed. Perennial. Flowers in June.

CAREX RUPESTRIS. *Rock Carex.* TAB. **1270*.**

Spike linear, with a few fertile, lax flowers at the base. Fruit obovate, triquetrous, rostrate, with an entire orifice; scarcely longer than the obtuse or cuspidate scale.

Carex rupestris, *Allioni.—E. B. Supp. new series* 2814. *Hooker ed.* 4. 331. *Macreight* 255. C. petræa, *Wahlenberg.* C. attenuata, *Brown in Franklin's Nar. App. p.* 753.

Found by Messrs. Dickie and Templeton on the rocks above the lake at the top of Glen Callader. It is a frequent inhabitant of the alpine and arctic rocks both of Europe and North America. Creeping at the root. Stem 3 to 8 inches high, acutely triangular, rough upwards. Leaves narrow, rigid, flat, keeled; ending in a long, attenuated, tortuous, rough, triangular point. Spike composed of 3

to 6 loosely-set flowers below, and numerous crowded barren ones above. Lower bracteal scales with their middle rib often prolonged into an acute terminal point or extending in the form of a seta. Fruit about as long or shorter than the scale. Perennial. Flowers in August.

** *Fertile and barren flowers in separate spikes; barren spike generally single.*

† *Involucral bracteas membranaceous.*

CAREX DIGITATA. *Fingered Carex.* TAB. **1271.**

Leaves plane. Involucral bracteas membranaceous, sheathing. Spikes linear, lax, erect, approximated; fertile ones 2 or 3, longer than the barren one. Fruit obovate, downy, scarcely sessile.

Carex digitata, *E. B.* 615. *Smith* IV. 93. *Lindley* 287. *Hooker ed.* 2. 390. *ed.* 3. 397. *ed.* 4. 343. *Macreight* 255.

A rare inhabitant of woods and thickets in limestone districts, as on St. Vincent's rocks, near Bath, and about Ripon, Yorkshire. Roots tufted. Stems 6 or 8 inches high, smooth, obscurely triangular. Leaves almost all radical, soft, bright-green, their sheaths red; shorter than the stem. Spikes terminal, growing in a finger-like manner; the barren one shortest and most dense. Perennial. Flowers in May.

CAREX CLANDESTINA. *Dwarf Silvery Carex.* TAB. **1272.**

Leaves channelled. Involucral bracteas membranaceous, sheathing. Fertile spikes distant, few-flowered; nearly concealed by the sheaths. Fruit broadly obovate, triquetrous, contracted at the base, slightly downy.

Carex clandestina, *E. B.* 2124. *Smith* IV. 94. *Lindley* 287. *Hooker ed.* 2. 390. *ed.* 3. 396. *ed.* 4. 342. *Macreight* 255.

Found hitherto only on St. Vincent's Rocks near Bristol. Roots tufted. Stems 1 to 2 inches high, nearly concealed by the taller erect, narrow, rigid leaves. Barren spike terminal, slender; its bracteal scales ovato-lanceolate, reddish with silvery edges. Fertile spikes 2 or 3, enveloped while in flower by their involucral sheaths. Perennial. Flowers in May.

†† *Involucral bracteas leafy, often sheathing. Fruit downy, in C. præcox, C. pilulifera, and C. tomentosa; in the rest smooth. In C. atrata, C. Vahlii, and C. canescens the terminal spike is androgynous.*

CAREX PENDULA. *Great Pendulous Carex.* TAB. **1273.**

Sheaths nearly equal to the flower-stalks. Spikes cylindrical, very long, drooping. Fruit ovate, acuminate, bifid at the beak; closely imbricated.

Carex pendula, *E. B.* 2315. *Smith* IV. 95. *Lindley* 287. *Hooker ed.* 2. 390. *ed.* 3. 397. *ed.* 4. 341. *Macreight* 254.

Occasionally met with in moist woods and thickets, but very locally distributed. It is one of the largest of our native Carexes, and is prominently distinguished by its very long, dense, curved, and pendulous spikes. Root fibrous, forming tufts. Stems 3 to 6 feet high, leafy, sharply triangular, and rough towards the top. Leaves long and broad, rough at the edges and keel, all sheathing at the base. Involucral bracteas leaf-like, their sheathing bases about as long as the peduncles. Spikes several (4 to 7), the terminal one only barren: the fertile ones all elegantly curved to one side and drooping, 4 to 6 inches in length; the uppermost sometimes with a few barren flowers below, while the barren spike is occasionally terminated with a few fertile ones. Perennial. Flowers in May and June.

CAREX STRIGOSA. *Loose Pendulous Carex.* TAB. **1274.**

Sheaths nearly equal to the flower-stalks. Spikes very slender, nearly erect. Fruit ovato-lanceolate, ribbed, triangular; loosely imbricated.

Carex strigosa, *E. B.* 994. *Smith* IV. 95. *Lindley* 287. *Hooker ed.* 2. 391. *ed.* 3. 397. *ed.* 4. 341. *Macreight* 254.

Far from frequent, even in the middle and eastern counties of England where it is chiefly found, growing in woods and thickets. Stem slender 1 or 2 feet high, smooth. Leaves rather broad, thin, rough on the edges and keel, pale-green. Sheaths somewhat membranaceous. Fertile spikes 4 or 5, slender, rather lax; eventually a little drooping, but never pendulous. Fruit slightly recurved. Perennial. Flowers in May and June.

CAREX SYLVATICA. *Pendulous Wood Carex.* TAB. **1275.**

Sheaths not half the length of the flower-stalks. Spikes slender, lax, drooping. Fruit broadly ovate, triangular, acuminate; cloven at the beak.

Carex sylvatica, *E. B.* 995. *Smith* IV. 96. *Lindley* 287. *Hooker ed.* 2. 391. *ed.* 3. 397. *ed.* 4. 341. *Macregiht* 254.

Common in moist woods and thickets, especially on a clayey soil. Very much resembling the last species in habit, stature, and foliage; but the spikes are less compact, on longer capillary peduncles, and more pendulous from the beginning. The fruit is very different, being without ribs and acuminated so as to form a long beak. Perennial. Flowers in May and June.

Linnæus informs us that the Laplanders employ this plant, properly carded and dressed, as a wadding to protect their feet from the cold.

CAREX DEPAUPERATA. *Starved Wood Carex.* TAB. **1276.**

Sheaths much shorter than the flower-stalks. Spikes erect; fertile ones distant, very few-flowered. Fruit large, inflated, sub-globose, ribbed, with a bifid beak.

Carex depauperata, *E. B.* 1098. *Smith* IV. 97. *Lindley* 287. *Hooker ed.* 2. 391. *ed.* 3. 397. *ed.* 4. 340. *Macreight* 254.

This species is a rare inhabitant of dry upland woods, and has

hitherto been met with chiefly in Charlton-wood, Kent; near Godalming and Guildford, Surrey; and about Forfar, in Scotland. Stem from a foot to a foot and a half in height, slender, smooth. Leaves and bracteas distant. Fertile spikes consisting of about 3 flowers, seldom more. Perennial. Flowers in May and June.

The fertile spikes become longer under cultivation in a garden, bearing many flowers, and the fruit under such circumstance is less ventricose. Can it be a variety of either of the two preceding which in habit it so much resembles?

CAREX Mielichoferi. *Loose-Spiked Rock Carex.* Tab. **1277.**

Sheaths not half the length of the flower-stalks. Fertile spikes 3, distant, erect, lax. Fruit ovate, tumid, triangular, rough-edged; its beak cloven, membranous at the summit.

Carex Mielichoferi. *Willdenow. E. B.* 2293. *Lindley* 287. *Hooker ed.* 2. 391. *ed.* 3. 398. *Macreight* 254. C. phæostachya, (a probable variety of *C. panicea,*) *Hooker ed.* 4. 340.

Found on the rocky ledges of the Breadalbane mountains. Stems about a foot high, smooth, roundish. Leaves chiefly radical, flat, smooth. Fertile spikes lax, of from 6 to 12 flowers. Bracteal scales broad, bluntish, reddish-brown. Fruit green, oblongo-ovate, incurved, triangular, cloven at the beak. Perennial. Flowers in August.

CAREX capillaris. *Dwarf Capillary Carex.* Tab. **1278.**

Common sheath not half as long as the flower-stalks. Fertile spikes few-flowered, lax, drooping. Fruit oblongo-ovate, acuminate, as long as the ovate, membranous, deciduous scales.

Carex capillaris, *E. B.* 2069. *Smith* IV. 100. *Lindley* 288. *Hooker ed.* 2. 392. *ed.* 3. 398. *ed.* 4. 340. *Macreight* 254.

This elegant little Carex is tolerably abundant on some of the Highland mountains. Stems 2 to 6 inches in height, roundish, smooth. Leaves mostly radical, very narrow, about half as long as the stem, smooth, or only rough on the edges towards the acute point. Spikes 3 or 4, on longish, capillary stalks, which are subumbellate and about twice the length of the involucral sheath: barren spike erect, linear, pale, about 10-flowered, often lower than the others: fertile spikes ovate, drooping. Fruit dark-brown, shining, triangular, smooth, with a sharp beak. Perennial. Flowers in June and July.

CAREX limosa. *Mud Carex.* Tab. **1279.**

Sheaths extremely short, scarcely any. Fertile spikes oblongo-ovate, dense, pendulous. Scales as long as the fruit. Fruit elliptical or roundish, compressed, striated, shortly mucronated.

Carex limosa, *E. B.* 2043. *Smith* IV. 102. *Lindley* 288. *Hooker ed.* 2. 392. *ed.* 3. 398. *ed.* 4. 340. *Macreight* 254.

Rare in England, but not unfrequent in deep muddy bogs and marshes in Scotland and Ireland. Creeps widely at the root, sending up stems about a span high. Leaves narrow, keeled, rough at the edge, rather glaucous. Fertile spikes 1 or 2, drooping on rather

long, slender, smooth stalks. Bracteal scales elliptical, acute, as long as the fruit, dark-brown or bronze colour, with a light-green or yellowish rib. Fruit greenish-brown, glaucous. Perennial. Flowers in June.

CAREX RARIFLORA. *Loose-Flowered Alpine Carex.* TAB. **1280.**

Sheaths very short, nearly absent. Fertile spikes narrow-oblong, very few-flowered, lax, pendulous. Scales longer than the fruit. Fruit obovate, with 3 blunt angles and depressed sides, striated.

Carex rariflora, *E. B.* 2516. *Smith* IV. 100. *Lindley* 288. *Hooker ed.* 2. 392. *ed.* 3. 399. *ed.* 4. 341. *Macreight* 254. C. limosa γ, *Wahlenberg.*

A native of high alpine bogs in the north of Scotland. Resembling the last species in habit, but smaller, and differs widely in the inflorescence. Creeps at the root. Stem 5 or 6 inches high. Spikes comparatively very small and bearing very few flowers. Bracteal scales longer than the pale-coloured fruit, blackish-brown with a pale midrib. Fruit bluntly triangular, never compressed as in the last species. Perennial. Flowers in June.

CAREX PSEUDO-CYPERUS. *Cyperus-like Carex.* TAB. **1281.**

Sheaths scarcely any. Fertile spikes dense, cylindrical, pendulous on very long flower-stalks. Scales setaceous. Fruit oblong, acuminate, deeply cloven at the beak, furrowed.

Carex Pseudo-Cyperus, *E. B.* 242. *Smith* IV. 101. *Lindley* 288. *Hooker ed.* 2. 393. *ed.* 3. 399. *ed.* 4. 341. *Macreight* 254.

This, the most elegant of the larger species of Carex, is rather a local plant : it occurs in moist shady places on the banks of rivers, ponds, and lakes, forming large and conspicuous tufts, which are readily recognized in the flowering season by the pendulous, yellowish-green inflorescence. Stems 2 or 3 feet high, acutely triangular, rough at the edges. Leaves about half an inch broad, rough on the margins and keel. Involucral bracteas leaf-like, the lowermost sometimes forming a sheath at the base; the upper ones little more than amplexicaul. Fertile spikes 3 to 5, about 2 inches long, on capillary footstalks nearly their own length. Bracteal scales very short, but with the midrib prolonged into a rough, bristle-like process equaling the fruit in length. Fruit compressed, furrowed or striated, rough on the edges; a little divaricated. Perennial. Flowers in June.

Like other species of Carex and allied genera which grow naturally in wet situations, this will bear cultivation well in the garden, even in a dry soil, and is highly ornamental without becoming very intrusive, being more prone to increase its diameter as a tuft than to send out long runners. *C. pendula* and *Cyperus longus* Tab. 55 are likewise well adapted for a similar purpose.

CAREX USTULATA. *Scorched Alpine Carex.* TAB. **1282.**

Sheaths shorter than the flowers-talks. Fertile spikes oval, pendu-

lous. Fruit elliptical, compressed, shortly acuminated, the beak bifid.

Carex ustulata, *E. B.* 2404. *Smith* IV. 103. *Lindley* 288. *Hooker ed.* 2. 393. *ed.* 3. 399. *ed.* 4. 341. *Macreight* 254.

Gathered by Mr. George Don, in watery places in a micaceous soil on Ben Lawers, Scotland. Root tufted. Stem about a span high, slender, triangular, smooth. Leaves short, erect, striated, smooth, chiefly radical. Fertile spikes 2 or 3, short, tumid, on slender, drooping stalks; dark-coloured, looking as if scorched. Bracteal scales with a pale midrib, as long as the fruit. Fruit with a short, cloven beak, rough on the margin at the upper part. Perennial. Flowers in July.

CAREX ATRATA. *Black Carex.* TAB. **1283.**

Sheaths scarcely any. Spikes ovate, stalked, more or less pendulous; the terminal one with sterile flowers at the base. Fruit roundish-ovate, compressed, the beak bifid.

Carex atrata, *E. B.* 2044. *Smith* IV. 103. *Lindley* 289. *Hooker ed.* 2. 393. *ed.* 3. 399. *ed.* 4. 335. *Macreight* 254.

Rare on the mountains of Snowdon and Breadalbane. Root somewhat tufted. Stem about a foot high. Leaves broad, flat, rough-edged, of a bright-grass-green. Spikes generally 4, oval, tumid, ultimately pendulous; the terminal one not barren, but with several stameniferous flowers at the lower part, or androgynous. Bracteal scales dark-purplish-brown, with a pale midrib. Fruit broad, compressed, yellowish-brown, darker at the beak, which is short and bifid. Perennial. Flowers in June and July.

This species and the two following are remarkable for having the terminal spike androgynous, instead of consisting entirely of barren flowers as in the rest of the subsection.

CAREX VAHLII. *Close-headed Alpine Carex.* TAB. **1283*.**

Sheath nearly absent. Spikes 3 or 4, roundish or oblong, aggregated; the terminal one with barren flowers at the base. Fruit obovate, scabrous above with minute crystalline prickles, shortly beaked, longer than the ovate, obtuse scale.

Carex Vahlii, *Schkur.*—*E. B. Supp.* 2666. *Hooker ed.* 2. 389. *ed.* 3. 395. *ed.* 4. 335. *Macreight* 255.

Grows on rocks above Loch Callader, and in Glen Dole, Scotland, where it forms small, spreading tufts. Stems from 6 inches to a foot high, rigid, triangular, rough at the edges. Leaves rather short, about a line in breadth. Spikes collected into a head; terminal one sometimes barren at the apex as well as the base. Bracteal scales of the fertile flowers dark-brown or black, broadly ovate; those of the barren ones paler, somewhat lanceolate. Fruit obovate, much longer than the scale, green or tawny, with a short bifid beak: "the angles of the fruit on its upper part are rough with crystalline prickles, and the beak is also rough, but the surface is not pubescent." Perennial. Flowers in August and September.

CAREX CANESCENS. *Hoary Carex.*

"Spikelets 3 to 5; terminal one barren at the base; fertile sessile, except the lowest, which is on a short stalk and subremote. Fruit oblong-oval, obtuse, triquetrous, nerved, bidentate, pellucidly asperate, shorter than the ovate cuspidate scales."

Carex canescens, *Linn.* *Hooker ed.* 4. 335. *not of Lightfoot, nor Fl. Dan., nor Wahlenberg.* C. Buxbaumii, *Willdenow.* C. polygama, *Schkur.*

Found by Mr. Moore on Church Island, in Lough Neagh, Ireland. Creeps at the base. Stems 1 or 2 feet high, acutely triangular, rough, leafy at the base, and clothed with purple sheaths which are torn and reticulated at their edges. Leaves straight, shorter than the stem. Involucral bracteas auricled, but without sheaths. Androgynous spike pedunculated, obovate. Fertile spikes about 3, more or less remote, erect. Fruit glaucous-green, stained with brown; shorter than the bracteal scales, which are brown with a pale-green rib. Perennial. Flowers in July.

CAREX PALLESCENS. *Pale Carex.* TAB. **1284.**

Sheaths very short. Fertile spikes pedunculated, oblong, cylindrical; pendulous when in fruit. Fruit obovato-elliptical, tumid, striated, obtuse, with a minute abrupt beak.

Carex pallescens, *E. B.* 2185. *Smith* IV. 105. *Lindley* 289. *Hooker ed.* 2. 393. *ed.* 3. 400. *ed.* 4. 338. *Macreight* 254.

Frequent in marshes and moist meadows, where it may be readily recognised by the pale-green colour of its obtuse spikes when in fruit. Stem a foot or 18 inches high, acutely triangular and rough in the upper part. Leaves slightly downy, rough on the edges. Fertile spikes 2 or 3, on long slender peduncles; their involucral bracteas generally rising above the stem. Scales ovate, yellowish brown, their midrib green, projecting at the apex in the form of a little point. Fruit very obtuse, light-green. Perennial. Flowers in June.

The whole plant is of a pale hue, but not glaucous.

CAREX FLAVA. *Yellow Carex.* TAB. **1285.**

Sheaths short, about equal to the flower-stalks. Fertile spikes roundish-oval. Fruit obovate, with 3 angles; the beak cloven and curved downwards.

Carex flava, *E. B.* 1294. *Smith* IV. 107. *Lindley* 289. *Hooker ed.* 2. 393. *ed.* 3. 400. *ed.* 4. 337. *Macreight* 254.

Common in turfy bogs and pastures, where it spreads widely by the root. Stem from a few inches to a foot in height. Leaves chiefly radical, erect, as tall as the stem, comparatively broad, rough on the edges and keel, and generally with 2 rough lines on their upper side towards the apex. Involucral bracteas long, leaflike, spreading. Fertile spikes about 3, nearly globular; the barren narrow-lanceolate, rather distant. Scales tawny, with a greenish midrib, shorter than the yellowish, spreading fruit. Perennial. Flowers in May and June.

Whole plant of a yellowish hue, especially the inflorescence.

CAREX Oederi. *Oederian Carex.* Tab. **1286.**

Sheaths short, about equal to the flower-stalks. Fertile spikes roundish-oval. Fruit obovate, turgid, spreading; the beak bifid, straight.

Carex Oederi, *E. B.* 1773. *Smith* IV. 107. *Lindley* 289. *Hooker ed.* 2. 394. *ed.* 3. 400. *ed.* 4. 338. C. flava β. *Hooker Fl. Scot. Macreight* 254.

Frequent on moist heaths and in boggy ground. Habit and general appearance that of the preceding species, from which the only important feature of distinction consists in the straight beak of the fruit. The spikes are generally more approximate than those of *C. flava*, but that is a very variable plant in this respect, nor do we always find the beak of its fruit so remarkably curved as expressed in our figure. Perennial. Flowers in May and June.

CAREX fulva. *Tawny Carex.* Tab. **1287.**

Stem scabrous. Sheaths long, but shorter than the flower-stalks. Fertile spikes ovate, distant, erect. Bracteal scales acute. Fruit broadly ovate, acuminated into a straight bifid beak, pointing upwards, glabrous.

Carex fulva, *E. B.* 1295. *Smith* IV. 107. *Lindley* 289. *Hooker ed.* 2. 394. *ed.* 3. 400. *ed.* 4. 338. *Macreight* 254.

Not unfrequent in boggy meadows. Creeping at the root. Stem slender, about a foot high, sharply triangular, and rough. Leaves upright, rough at the keel and margins. Fertile spikes mostly 2, of a tawny hue, ovate; their stalks about half as long again as the sheaths. Bracteal scales ovate, acute, but never mucronate, shorter than the tawny fruit. Perennial. Flowers in June.

It somewhat resembles *C. distans*, but is distinguished by its rough stem, acute, not mucronate scales, and longer-beaked fruit; it is besides a smaller plant, with paler-coloured, more lax, and fewer-flowered spikes.

CAREX speirostachya. *Dense Short-spiked Carex.* Tab. **1287*.**

Stem smooth. Sheaths long, but only half the length of the peduncles. Fertile spikes ovate, distant, erect, (mostly 3). Scales acute. Fruit ovate, ventricose, ribbed, smooth, with a rough, cloven beak, membranous at the orifice.

Carex speirostachya, *Swartz. E. B. Supp.* 2770. *Smith* IV. 98. *Lindley* 288. *Hooker ed.* 2. 391. *ed.* 3. 398. *Macreight* 254. C. fulva β. *Hooker ed.* 4. 338. C. Hosteana, *DeCand.?*

Found in bogs and marshy meadows in the south of Scotland, and in Ireland. Creeps at the root. Herbage of a lively-green. Stem about a foot high, bluntly triangular, smooth and glossy, except a slight degree of roughness towards the top. Leaves erect, rough on the margin. Fertile spikes generally 3, distant; on slender, capillary stalks, which are full twice as long as the sheaths. Scales broadly ovate, acute, brown, with a white scariose border, and a

green rough midrib. Fruit triangularly ovate, green, longer than the scales; with a rather long beak, cloven at the top, the orifice white and membranous. Perennial. Flowers in July and August.

Very nearly allied to *C. fulva* and *C. distans*, if not, indeed, as considered by Hooker, a mere variety of the former.

CAREX EXTENSA. *Long-bracteated Carex.* TAB. **1288.**

Stem smooth. Sheaths very short, as long as the flower-stalks. Involucral bracteas leaflike, very long and spreading. Fertile spikes roundish-ovate, nearly sessile, erect. Scales slightly mucronate. Fruit ovate, striated; the beak short, smooth, bifid.

Carex extensa, *E. B.* 833. *Smith* IV. 400. *Lindley* 289. *Hooker ed.* 2. 394. *ed.* 3. 400. *ed.* 4. 338. *Macreight* 254.

Rather rare in marshes near the sea. Stem from a few inches to a foot high, bluntly triangular, smooth throughout. Leaves very narrow, convolute, rough on the margin upwards. Involucral bracteas spreading nearly horizontally, scarcely sheathing. Barren spike sometimes accompanied by a smaller one, and occasionally with a few fertile flowers at the lower part. Fertile spikes 2 or 3, variable in figure, but mostly short, oval, or roundish, on very short stalks. Fruit longer than the scales, somewhat triangular, striated, brownish-green, never spreading. Perennial. Flowers in June.

CAREX DISTANS. *Distant-spiked Carex.* TAB. **1289.**

Stem smooth. Sheaths very long, nearly equal to the flower-stalks. Fertile spikes oblong, very remote. Scales mucronate, shorter than the fruit. Fruit triangularly ovate, smooth, equally ribbed; the beak narrow, short, bifid.

Carex distans, *E. B.* 1234. *Smith* IV. 109. *Lindley* 289. *Hooker ed.* 2. 394. *ed.* 3. 401. *ed.* 4. 339. *Macreight* 254.

Probably not very uncommon in muddy marshes near the sea, though perhaps often passed over for *C. fulva*, which in aspect it nearly resembles, although very distinct in several of its most important characters. Stem a span to 18 inches in height, erect, very slender, bluntly triangular, or rather flattened on one side only, smooth. Leaves short, rough on the edges. Fertile spikes 2 or 3, oblong, cylindrical, very distant, on rather long peduncles which are entirely concealed by the sheaths. Scales pale-brown or rust colour, their keel or midrib extending into a short point at the apex. Fruit longer than the scale, brownish when ripe, with many equal ribs. Perennial. Flowers in June.

CAREX PUNCTATA. *Dotted-fruited Carex.*

" Barren spike with obtuse ferruginous scales; fertile ones 3, rarely 4, cylindrical, erect, stalked, with sheathing bracteas (involucral). Fruit ovate, tumid, glabrous, shining, pellucidly punctate, diverging, of a light-green, obsoletely nerved, except at the margins, with a linear bidentate beak, larger than the ovate, short, aristate

scales, which are pale-ferruginous with a green nerve." *Dr. Boott in Hooker Brit. Flor.* 339.

Carex punctata, *Gaudin. Hooker ed.* 4. 339. *Macreight* 254. C. Helvetica, *Schleich.* C. distans, *β. Deslongch. Fl. Gall.* 297.

Discovered several years ago by Mr. Dawson Turner, near Beaumaris, and on the shores of the Menai, near Bangor, by Mr. W. Wilson. Base creeping. Stem 12 to 18 inches high, erect, smooth, leafy below. Barren spikes rarely 2; fertile ones more or less remote, the 2 upper subapproximate. Beak about $\frac{1}{3}$ the length of the fruit. Perennial. Flowers in June.

"Differs from *C. distans* in its smaller size, its light-green, more approximate spikes, its more erect stem, and in its fruit." *Boott.*

CAREX BINERVIS. *Green-ribbed Carex.* TAB. **1290.**

Stem smooth. Sheaths elongated, shorter than the flower-stalks. Fertile spikes cylindrical, remote; sometimes compound. Scales mucronate. Fruit triangularly ovate, with 2 principal submarginal (green) ribs on the outer surface; the beak rather broad, smooth, bifid.

Carex binervis, *E. B.* 1235. *Smith* IV. 110. *Lindley* 289. *Hooker ed.* 2. 395. *ed.* 3. 401. *ed.* 4. 339. *Macreight* 254.

Frequent on dry heaths and moors. Somewhat resembling *C. distans*, but in general a taller and stronger plant, more rigid, and of a deeper green colour, with a glaucous tinge. The spikes too are of a darker hue, the scales being almost black, with a 3-ribbed, green, rough keel and point, and the fruit highly coloured; the latter too is more acutely triquetrous, with 2 green longitudinal ribs or nerves on the outer side. Upper fertile spikes occasionally more approximate; the lower sometimes branched at the base (compound), and not unfrequently bearing some barren flowers in their upper part. Perennial. Flowers in June.

Perhaps not specifically distinct, any more than *C. punctata*, from *C. distans*, with which many botanists have confounded it: the green ribs of the fruit constitute its most important feature.

CAREX PRÆCOX. *Vernal Carex.* TAB. **1291.**

Sheaths about equal to the very short flower-stalks. Spikes oval-oblong, approximate. Scales elliptic-oblong; those of the fertile flowers shortly mucronate. Fruit pyriform, with an abrupt, entire beak, downy.

Carex præcox, *E. B.* 1099. *Smith* IV. 111. *Lindley* 290. *Hooker ed.* 2. 395. *ed.* 3. 401. *ed.* 4. 342. *Macreight* 254.

Common on dry heaths and pastures, where its tufts of numerous yellow anthers render it very conspicuous in the spring. A dwarf species. Spreading rather widely at the root and forming here and there little leafy tufts. Stems obliquely ascending, 3 inches to a span in height, smooth. Leaves all radical, rigid, short, recurved, rough at the edges. Involucral bracteas erect, often wanting. Fertile spikes mostly 2, erect and approximate. Fruit green tipped with brown, shorter than the scales. Perennial. Flowers in April and May.

CAREX PILULIFERA. *Round-headed Carex.* TAB. **1292.**

Stems weak, scabrous. Sheaths none. Fertile spikes sessile, clustered, roundish. Scales mucronate. Fruit roundish-obovate, acute, downy; the beak short and cloven.

Carex pilulifera, *E. B.* 885. *Smith* IV. 112. *Lindley* 290. *Hooker ed.* 2. 395. *ed.* 3. 401. *ed.* 4. 342. *Macreight* 254. C. montana, *Linn.*

Common on heaths and moory ground. Stems generally decumbent, weak, rough, 6 inches to a foot high. Leaves bright-green, rough on the edges and keel. Fertile spikes 2 or 3, roundish when in fruit; their scales ovate, acute, sharply mucronated. Fruit shorter than the scales, somewhat triangular, but almost spherical, green, clothed with thick, short down. Perennial. Flowers in June.

CAREX TOMENTOSA. *Larger Downy-fruited Carex.* TAB. **1293.**

Sheaths scarcely any. Fertile spikes nearly sessile, cylindrical, obtuse. Scales acute, elliptical. Fruit globose, densely downy, with a short, scarcely bifid beak.

Carex tomentosa, *E. B.* 2046. *Smith* IV. 113. *Lindley* 290. *Hooker ed.* 2. 395. *ed.* 3. 402. *ed.* 4. 342. *Macreight* 254.

Rare; having hitherto been found only in meadows near Merston Measey, Wiltshire. It is one of the creeping species, spreading widely at the base, and sends up naked, triangular, roughish stems to the height of a foot or more. Leaves upright, flat, rough. Barren spike lanceolate, bluntish; with lanceolate, rust-coloured scales, having green keels. Fertile spikes mostly 2, not very distant; their scales broadly ovate. Fruit as long as the scales, triangularly-globose, green, clothed with a short, dense, whitish down, which becomes tawny when quite ripe. Perennial. Flowers in June.

CAREX PANICEA. *Pink-leaved Carex.* TAB. **1294.**

Stem smooth. Sheaths elongated, about half the length of the flower-stalks. Fertile spikes subcylindrical, the flowers rather distant. Fruit tumid, subglobose, obtuse, glabrous, and entire at the point.

Carex panicea, *E. B.* 1505. *Smith* IV. 114. *Lindley* 290. *Hooker ed.* 2. 396. *ed.* 3. 402. *ed.* 4. 340. *Macreight* 254.

Common in bogs and marshy meadows. Base creeping. Stem erect, 12 to 18 inches high, obtusely triangular. Leaves short, rather broad, glaucous, rough on the edges. Barren spikes sometimes 2: fertile ones 2, occasionally staminiferous at their summits, remote, erect. Scales ovate, acute, shorter than the fruit, brown, with white edges and a green keel. Fruit a little striated, light-greenish- or yellowish-brown. Perennial. Flowers in June.

CAREX PHÆOSTACHYA. *Short Brown-spiked Carex.* TAB. **1294*.**

Sheaths shorter than the flower-stalks. Fertile spikes 2, distant, erect, oval. Scales of the barren spike pointed; of the fertile ones obtuse. Fruit ovate, triangular, smooth, with a cloven beak.

Carex phæostachya, *E. B. Supp.* 2731. *Smith* IV. 99. *Lindley* 288. *Hooker ed.* 2. 392. *ed.* 4. 340. C. salina, *Don H. Brit.* 216. *not of Swartz.* C. Scotica, *Sprengel.* C. panicea, *var. Hooker ed.* 2. 402.

Found on the Highland mountains of Scotland, in many places. Creeping widely at the base. Stem erect, 5 or 6 inches high, smooth, obtusely triangular. Leaves nearly upright, flat, smooth. Fertile spikes ovate, about half an inch long. Scales of the barren spike ovate, acute, more or less pointed; those of the fertile ones broad, bluntish; all dark-brown with yellowish keels. Fruit green tinged with brown, indistinctly ribbed, smooth, with a broadish brown beak, projecting beyond the scale, and acutely cloven. Perennial. Flowers in July.

Sir W. Hooker associates with this *C. Mielochoferi, Tab.* 1277, but considers them both as only different states of *C. panicea.*

*** *Fertile and barren flowers in separate spikes. Barren spikes 2 or more (often solitary in C. recurva, and C. lævigata).*

† *Fruit glabrous (or rather downy in C. recurva.)*

CAREX RECURVA. *Glaucous Heath Carex.* TAB. **1295.**

Sheaths very short, scarcely any. Fertile spikes cylindrical, dense, on long slender stalks, scarcely drooping. Fruit obovate, triangular, slightly downy or smooth; beak very short, entire.

Carex recurva, *E. B.* 1506. *Smith* IV. 114. *Lindley* 290. *Hooker ed.* 2. 396. *ed.* 3. 402. *ed.* 4. 342. *Macreight* 253.

Common in woods, and on moist pastures, heaths and moors, where its short, glaucous leaves render it very conspicuous. Creeps at the base. Stems about a foot in height, roundish-triangular, rough at the upper part. Leaves chiefly radical, erect, rather broad, shorter than the stem, very glaucous. Barren spikes often 2 or 3; fertile ones generally 2, sometimes androgynous, or terminated with staminiferous flowers, subsequently pendulous. Scales brown or blackish, with a white margin and yellowish keel. Fruit closely imbricated, bluntly triangular, subglobose, brown when ripe. Perennial. Flowers in June.

A very variable species, of which 2 varieties are figured among our plates:

C. Micheliana, *E. B.* 2236. Barren spikes several. Fruit smooth. TAB. **1295*.**

C. stictocarpa. *Dotted-fruited Carex, E. B. Supp.* 2772. Fertile spikes subovate. Fruit smooth, besprinkled with minute brown, depressed dots. TAB. **1295**.**

CAREX PALUDOSA. *Lesser Common Carex.* TAB. **1296.**

Sheaths none. Spikes cylindrical, obtuse, erect; scales of the barren ones obtuse. Fruit oblongo-ovate, acute, striated; the beak bifid.

Carex paludosa, *E. B.* 807. *Smith* IV. 120. *Lindley* 291. *Hooker ed.* 2. 397. *ed.* 3. 404. *ed.* 4. 344. *Macreight* 253. C. acuta, *Curtis.*

Common on the banks of rivers and ditches, creeping widely at the root and sending up its stems to the height of 2 or 3 feet. Leaves broad, rough, strongly keeled. Barren spikes about 3, subtriangular, with obtuse scales: fertile ones 3, their scales awn-pointed, brown with a greenish keel. Fruit as long as the scales, elliptic-lanceolate, the beak rather notched than bifid. Perennial. Flowers in May.

Somewhat resembling *C. acuta* of the preceding subgenus, but a stouter and more erect plant, and essentially distinguished by having 3 stigmas instead of 2. From *C. riparia* it is known by its barren spikes having obtuse, never pointed scales. The 3 species were formerly confounded under the *acuta* of Linnæus: they may often be met with accompanying each other, and a superficial observer, misled by their similarity of habit, might regard them as the same species in different states of luxuriance.

CAREX RIPARIA. *Great Common Carex.* TAB. **1297.**

Sheaths none. Spikes broadly cylindrical, acute, erect; scales of the barren ones acuminate. Fruit oblongo-ovate, somewhat tumid, striated; the beak deeply cloven.

Carex riparia, *E. B.* 579. *Smith* IV. 121. *Lindley* 291. *Hooker ed.* 2. 398. *ed.* 3. 404. *ed.* 4. 344. *Macreight* 253. C. acuta, *Hudson.*

Common on the sides of rivers and ditches, and in watery meadows. A much stouter plant than the preceding, with broader leaves and larger spikes. Stem 2 or 3 feet high, the angles very sharp and rough, as are the edges of the leaves, and cutting like a fine saw. Barren spikes about 3, with lanceolate, very acuminate scales: fertile ones 3 or 4, the uppermost frequently terminated with barren flowers. Perennial. Flowers in May.

CAREX LÆVIGATA. *Smooth-stalked Beaked Carex.* TAB. **1298.**

Sheaths elongated, shorter than the flower-stalks. Spikes cylindrical; the fertile ones stalked, drooping. Scales all acuminated or mucronate. Fruit ovate, triangular, striated; the beak very long, and bifid.

Carex lævigata, *E. B.* 1387. *Smith* IV. 122. *Lindley* 291. *Hooker ed.* 2. 398. *ed.* 3. 404. *ed.* 4. 339. *Macreight* 254.

Found in boggy woods and thickets, and occasionally in marshes, in several places both in Great Britain and Ireland, but far from frequent. Stem 2 or 3 feet high, rather slender, perfectly smooth throughout, as are the broad, rather short leaves. Barren spikes 1 or 2, triquetrous, approximate: fertile ones 3 or 4, with acuminated scales, which are serrated or rough towards the apex. Perennial. Flowers in June.

Somewhat resembling the next species, *C. vesicaria*, in habit, but distinguishable by the long stalks of its fertile spikes, and by the fruit never becoming inflated.

CAREX VESICARIA. *Shorter-spiked Bladder Carex.* TAB. **1299.**

Sheaths none. Fertile spikes cylindrical, slightly drooping on very short stalks. Scales all lanceolate, acute. Fruit broadly ovate, inflated, with a subulate, cloven beak.

Carex vesicaria, *E. B.* 779. *Smith* IV. 123. *Lindley* 291. *Hooker ed.* 2. 398. *ed.* 3. 405. *ed.* 4. 343. *Macreight* 253.

In bogs and marshy meadows, but not very common in the southern counties. Creeps at the base. Stems about a foot and a half or 2 feet high, with very sharp, rough angles, rather slender. Leaves erect, broadish, terminating in a taper point, rough on the edges and keel. Barren spikes 2 or 3, slender, acute; fertile ones 2 to 4, sometimes nearly sessile. Fruit longer than the scales, thickly ranged in several rows, spreading, tawny when ripe, very large, shining, and inflated. Perennial. Flowers in May and June.

CAREX AMPULLACEA. *Slender-beaked Bladder Carex.* TAB. **1300.**

Sheaths none. Fertile spikes cylindrical, erect, nearly sessile, long. Scales lanceolate. Fruit inflated, subglobose, with a linear, bifid beak.

Carex ampullacea, *E. B.* 780. *Smith* IV. 124. *Lindley* 292. *Hooker ed.* 2. 398. *ed.* 3. 405. *ed.* 4. 343. *Macreight* 253.

Found in similar situations as the preceding, and like it more frequent in the northern parts of the kingdom. Habit very similar to *C. vesicaria*; but the stem is smooth and nearly rounded; the leaves narrow, channelled, and glaucous; and the fruit smaller, roundish, inflated, not acuminated, and with a linear beak about its own length. Perennial. Flowers in June.

CAREX HORDEIFORMIS. *Barley Carex.*

Sheaths as long as the flower-stalks. Fertile spikes oblong, remote, erect. Scales mucronate. Fruit oblong, acuminate, compressed, striated, rough at the margin; the beak elongated, deeply cloven.

Carex hordeiformis, *Host. Hooker ed.* 2. 399. *ed.* 3. 405. *ed.* 4. 343. *Macreight* 253. C. secalina, *Wahlenberg. Smith* IV. 126. *Lindley* 292.

Found in a small valley about 3 miles west of Panmure, Forfar, Scotland. Stem about a foot high, smooth, bluntly angular, overtopped by the very long involucral bracteas. Barren spikes about 2, slender, remote; fertile ones ovato-cylindrical, mostly 3, the 2 upper often approximate, the lowest very remote. Fruit large, resembling a grain of barley. Perennial. Flowers in June.

†† *Fruit downy.*

CAREX HIRTA. *Hairy Carex.* TAB. **1301.**

Hairy. Leaves flat. Sheaths elongated, nearly equal to the flower-stalks. Fertile spikes short, cylindrical, remote. Scales awned. Fruit hairy, ovate, with a long cloven beak.

Carex hirta, *E. B.* 685. *Smith* IV. 125. *Lindley* 292. *Hooker ed.* 2. 398. *ed.* 3. 405. *ed.* 4. 343. *Macreight* 253.

Frequent in moist woods and meadows, and on the sides of ditches, pools and watery places. Whole plant hairy. Creeps widely at the root. Stems 1 to 2 feet high, with sharp, rough angles. Leaves erect, flat, pointed. Barren spikes 2; their scales brown, pointed, and hairy externally: fertile ones about 3, distant, erect; their scales smooth, terminating in long, rough awns. Fruit loosely imbricated, ovate, acuminated, ribbed, hairy; the beak deeply cloven. Perennial. Flowers in May and June.

CAREX FILIFORMIS. *Slender-leaved Carex.* TAB. **1302.**

Smooth. Leaves channeled. Sheaths very short. Fertile spikes subsessile, cylindrical or ovate. Scales pointed. Fruit hairy, ovate, with a very short, deeply bifid beak.

Carex filiformis, *E. B.* 904. *Smith* IV. 128. *Lindley* 292. *Hooker ed.* 2. 399. *ed.* 3. 405. *ed.* 4. 343. *Macreight* 253.

A native of boggy meadows, but rare, and chiefly met with in the north of England and Scotland. Creeps at the base. Stems 1 to 2 feet high, slender, nearly round, smooth, except towards the top. Leaves upright, narrow, their margins involute, filamentous at their bases near the root, rough at the edge. Barren spikes 2. Fertile ones about 3. Scales dark-brown with a yellow or greenish midrib. Fruit dark-brown, ribbed, clothed with a short tawny down. Perennial. Flowers in May.

GENUS CCCCLXIII. ELYNA. *Elyna.*

Nat. Order. CYPERACEÆ.

GEN. CHAR. *Flowers* in aggregated spikelets. *Spikelets* about 2-flowered, the upper one barren, the lower fertile, included in a broad sheathing bractea, and each within a convolute scale. *Barren flower. Stamens* 3.—*Fertile flower. Germen* 1. *Stigmas* 3.—both naked, the scales excepted. *Nut* obtusely trigonal, surrounded by the convolute scale.

Plants with the habit of *Schœnus* in the class Triandria, but separated on account of their monœcious flowers. From *Carex* they are distinguished by the absence of the united persistent glumes, inclosing the germen in that genus.

ELYNA CARICINA. *Compound-headed Elyna.* TAB. **1303.**

Spikelets aggregate, compound, alternate.

Schœnus monoicus, *E. B.* 1410. Kobresia caricina, *Willdenow. Smith* IV. 129. *Lindley* 284. *Macreight* 249. Elyna caricina, *Mart. & Koch, Fl. Germ. Hooker ed.* 2. 399. *ed.* 3. 406. *ed.* 4. 344.

Met with on mountain moors in the north of England and Scot-

land, where it forms little compact tufts in a muddy soil. Stems 3 to 6 or 8 inches high. Leaves very narrow, linear, rough, mostly radical. Bracteas and scales remarkably convolute, brown. Germen oblong, obscurely trigonal. Perennial. Flowers in August.

Some of the flowers are occasionally hermaphrodite.

Order IV. TETRANDRIA.

Genus CCCCLXIV. LITTORELLA. *Shoreweed.*

Nat. Order. Plantaginaceæ.

Gen. Char. *Barren flower. Calyx* 4-leaved. *Corolla* 4-cleft. *Stamens* very long.—*Fertile flower. Calyx* unequal, 3-parted. *Corolla* urceolate, contracted at the orifice, obsoletely toothed. *Style* very long. *Capsule* one-seeded.

A singular monœcious plant, elevating its barren flowers on long peduncles, while the fertile ones remain sessile at the root and nearly concealed in the axils of the leaves.

LITTORELLA lacustris. *Plantain Shoreweed.* Tab. **1304.**

The only known species.

Littorella lacustris, *E. B.* 468. *Smith* IV. 130. *Lindley* 170. *Hooker ed.* 2. 400. *ed.* 3. 406. *ed.* 4. 344. *Macreight* 192. Plantago uniflora, *Linn. Sp. Pl.*

Not unfrequent in watery places on a sandy or gravelly soil, but most abundant in alpine and subalpine districts, as on the borders of the Welch and Highland lakes. In habit it nearly resembles *Plantago maritima.* Root spindle-shaped, fixing itself by numerous long, simple fibres. Leaves all radical, linear, smooth, fleshy, semicylindrical, dilated at the base, 2 to 4 inches long. *Barren flowers* solitary at the extremity of peduncles (scapes) about as long as the leaves. Corolla white, somewhat salver-shaped, with an inflated tube and concave segments. Stamens equal, erect, their long filaments protruding far above the corolla; their anthers large, vertical. *Fertile flowers* sessile in the dilated bases of the leaves. Germen oblong, terminated by a filiform style about an inch long. Flowers in June. Perennial.

Genus CCCCLXV. ALNUS. *Alder.*

Nat. Order. Amentaceæ, *Jussieu.* Betulaceæ, *Lindley.*

Gen. Char. *Flowers* collected into imbricated catkins (amenta).—*Barren flower. Catkins* elongated, cylindrical. *Scales* 3-lobed, 3-flowered. *Calyx* 4-parted.—*Fertile*

flower. *Catkins* ovate. *Scales* obscurely 3-cleft, 2-flowered. *Calyx* none. *Styles* 2. *Nuts* compressed.

A genus of hardy trees with alternate, simple, serrated or toothed leaves, and deciduous stipules: separated from *Betula* on account of their tetrandrous flowers and wingless fruit. The species are distributed over the cold and temperate parts of the northern hemisphere.

ALNUS GLUTINOSA. *Common Alder*. TAB. **1305**.

Leaves roundish, somewhat wedge-shaped, glutinous; the margin lobed and serrated; downy at the axils of the veins beneath.

Betula Alnus, *Linn. E. B.* 1508. Alnus glutinosa, *Smith* IV. 131. *Lindley* 229. *Hooker ed.* 2. 400. *ed.* 3. 407. *ed.* 4. 345. *Macreight* 209.

A frequent tree in low, damp ground, and especially near lakes and rivers, throwing its broad arms and umbrageous foliage with much picturesque effect over the still reedy pool, and supplying the want of the oak in such parts of a landscape. Trunk often 20 to 30 feet high, but of slow growth; branches crooked, spreading, angular and glutinous when young. Leaves petiolate, roundish, often as it were lopped at the extremity, deep-shining-green above; the principal veins (costulæ) parallel. Peduncles terminal, branched. Barren catkins long, cylindrical, pendent, bearing 3 sessile flowers beneath each scale, deciduous. Fertile catkins short, ovate, ascending, the scales becoming rigid as the seed ripens; permanent. Flowers in March and April.

The wood is of a reddish hue, very brittle, but valuable on account of its long endurance in wet ground and under water; hence it is often employed in the foundations of bridges and buildings in swampy districts. The celebrated Rialto of Venice is said to be erected on Alder-piles, as are many other edifices in that city and also in Amsterdam. The charcoal made from Alder is highly prized in the manufacture of gunpowder, and considerable plantations of the tree are cultivated for this purpose, it being esteemed superior even to that of the willow. The bark, leaves, and young shoots yield a yellow colour, which is variously modified in its application by our dyers; being powerfully astringent they are likewise used in tanning, and fishing-nets are generally soaked in an infusion of Alder twigs to render them more durable. Nor is this tree, a contributor to so many useful purposes, undeserving of notice in a higher art, that of medicine, the bark having been found serviceable in the cure of ague, &c., and its decoction employed as a gargle in relaxation of the uvula and other disorders where astringent remedies are necessary.

GENUS CCCCLXVI. BUXUS. *Box*.

Nat. Order. EUPHORBIACEÆ.

GEN. CHAR. *Barren flower*. *Calyx* 4-leaved, 2 opposite

outer ones smaller, with one bractea at the base. *Stamens* inserted around the rudiment of a germen.—*Fertile flower*. *Calyx* as before, with 3 bracteas at the base. *Styles* 3. *Stigmas* obtuse. *Capsule* 3-beaked, 3-celled; cells 2-seeded.

A small genus of evergreen shrubs with entire, coriaceous leaves, and clustered axillary, greenish-yellow flowers. Remarkable as being the only arborescent plants of their natural order that are capable of existing in countries within the limits of severe frost.

BUXUS SEMPERVIRENS. *Common Box.* TAB. **1306.**

Leaves oblongo-ovate, retuse, convex, glossy; their petioles slightly downy. Anthers ovato-sagittate.

Buxus sempervirens, *E. B.* 1341. *Smith* IV. 133. *Lindley* 223. *Hooker ed.* 2. 400. *ed.* 3. 407. *ed.* 4. 345. *Macreight* 203.

The common Box grows apparently wild on some of the dry chalky hills of the southern counties of England, but, judging from the very local distribution of a plant that springs so abundantly from seed, is probably only naturalized. On Box Hill, in Surrey, which produces it in vast abundance, it attains a height of 10 or 12 feet. Branches 4-sided. Leaves opposite, elliptical, very retuse, and generally notched at the apex. Flowers in sessile, axillary clusters, pale-greenish-yellow; the calyx-leaves and bracteas are variable in number. Capsules somewhat globose, crowned with the 3 thick, permanent styles. Flowers in April and May.

Several varieties of Box are met with in cultivation, differing chiefly in habit, but also in the form and texture of the leaves; they are all, however, traceable to this species, except the Broad-leaved or Majorca Box, *B. Balearica*. The hardiness of the Common Box, added to its endurance under constant clipping, renders it well adapted for formal hedges and edgings to the flower-garden. Its wood is of slow growth, very hard, heavy, and close-grained, and is valued highly by the wood-engraver; mathematical instruments, chess-men, and various small articles of turnery-ware are likewise manufactured from it. For these purposes it is imported very largely from the Levant and southern Europe, its price varying in our markets from 7*l.* to 14*l.* per ton; but the wood of home growth is most prized by the engraver, and, although its supply must be very limited, according to Macculloch, the Box-trees cut down in 1815 on Box Hill produced upwards of 10,000*l.* B. sempervirens is a common tree in the southern kingdoms of Europe, Turkey and Persia, but a large proportion of the wood imported is supposed to be the produce of *B. Balearica*, the grain of which is not so fine. The leaves of the Box are poisonous to most quadrupeds.

GENUS CCCCLXVII. URTICA. *Nettle.*

Nat. Order. URTICACEÆ.

GEN. CHAR. *Barren flower. Calyx* 4-leaved. *Stamens*

surrounding a cup-shaped tubercle, the rudiment of a germen.—*Fertile flower.* *Calyx* 2-leaved. *Stigma* solitary. *Pericarp* one-seeded, enclosed by the calyx.

This is an extensive genus and widely distributed, some species being met with in every part of the globe. Their habit is various, in cold and temperate climates they are always herbaceous, in tropical ones frequently shrubs and sometimes even trees of considerable size: in Australia and New Zealand, *U. gigas*, *U. ferox*, and certain other species attain a height of 30 feet and upwards. They have all simple, opposite leaves, furnished with stipules at the base of the petiole, and more or less besprinkled with pungent hairs, or rather prickles. These prickles somewhat resemble in structure the poisonous fangs of a serpent, being tubular and perforated a little below the sharp point; while at the lower end they widen into a conical or mammillary chamber, containing a more or less venomous fluid. When slightly touched by the hand, the prickle readily penetrates the skin, and the compression of the cavity beneath forces the poison through the tube into the wound. This is the well-known *sting* of the nettle, sufficiently annoying to the unguarded in our native species, but trifling when compared with the effects produced by *U. crenulata*, *U. stimulans*, and others of tropical growth; which occasion violent pain and inflammation, and in some instances, it is said, even death has been the result.

The woody fibre of all the species of Nettle possesses great tenacity and flexibility, answering all the purposes of hemp, for which in some countries it is often substituted. The whole of the natural order, indeed, of which this genus is the type, is remarkable for furnishing fibre more or less resembling that material, and applicable to the manufacture of cordage, cloth, &c.

URTICA PILULIFERA. *Roman Nettle.* TAB. **1307.**

Leaves opposite, ovate, serrated, with transverse ribs. Fertile flowers in globular heads.

Urtica pilulifera, *E. B.* 148. *Smith* IV. 134. *Lindley* 219. *Hooker ed.* 2. 400. *ed.* 3. 407. *ed.* 4. 345. *Macreight* 206.

Chiefly found under walls and on waste ground among rubbish near the sea, especially in Norfolk and Suffolk. Stems about 2 feet high, obtusely quadrangular, generally purple. Leaves oval, or approaching to heart-shaped, pointed, very deeply serrated, the principal veins parallel, running to the points of the serratures. Flower-stalks axillary, the lowermost in pairs; one of each pair bearing, usually, a compact head of fertile flowers, and the other a loosely set panicle of barren ones. Annual. Flowers in June and July.

Its sting is more painful than those of the other native species.

URTICA URENS. *Small Nettle.* TAB. **1308**.

Leaves opposite, elliptical, with about 5 longitudinal ribs. Flowers in loose (nearly simple) racemes.

Urtica urens, *E. B.* 1236. *Smith* IV. 134. *Lindley* 219. *Hooker ed.* 2. 401. *ed.* 3. 407. *ed.* 4. 345. *Macreight* 206.

One of our most troublesome and prolific weeds on dry, light soils. A span to a foot in height. Leaves of a very bright green, deeply and very regularly serrated, the principal veins generally 5, longitudinal and nearly parallel. Annual. Flowers from June to October.

It is less venomous than the last, but more so than *U. dioica.*

URTICA DIOICA. *Great Nettle. Common Nettle.* TAB. **1309**.

Leaves opposite, cordate, acuminate. Clusters of flowers much branched, axillary, in pairs. Generally diœcious.

Urtica dioica, *E. B.* 1750. *Smith* IV. 135. *Lindley* 219. *Hooker ed.* 2. 401. *ed.* 3. 407. *ed.* 4. 345. *Macreight* 206.

This is the well-known Common Nettle so abundant on waste ground and hedge-banks in almost all soils and situations. It creeps widely at the root so as to be with difficulty eradicated. Stems 2 to 4 feet high, simple, bluntly 4-sided. Leaves very sharply and deeply serrated, strongly veined. Stipules membranous. Clusters of flowers spreading, very much branched. Perennial. Flowers in July and August. The pollen of the barren flowers is ejected with considerable force, and on a still, sultry day, may often be observed hovering like a mist over the plants, where, as is frequently the case, they form extensive patches.

The fibres of this species, when properly prepared, are nearly equal to the finest flax. The root with alum forms a good yellow dye. The leaves and young tops are often eaten boiled like spinach, especially by the common people in Scotland.

ORDER V. PENTANDRIA.

GENUS CCCCLXVIII. XANTHIUM. *Bur-Weed.*

Nat. Order. COMPOSITÆ.

GEN. CHAR. *Barren flowers* capitate upon a common receptacle. *Involucrum* formed of one series of scales, many-flowered. *Calyx* wanting. *Corolla* tubular, with 5 short clefts. *Anthers* terminating a tube which is inserted at the base of the corolla. *Receptacle* chaffy.—*Fertile flowers* 2 together, entirely inclosed by a tubular, somewhat inflated, prickly, 2-beaked involucrum. *Calyx* and *Corolla* both absent. *Fruit* 1-seeded, included in the enlarged and hardened involucrum.

A small genus of annual herbs scattered in various parts of the world. They have alternate leaves variously cleft and serrated, and an inflorescence rather singular than ornamental. *X. spinosum* is said to have been used by the ancient Greeks to dye their hair.

XANTHIUM STRUMARIUM. *Broad-leaved Bur-weed.* TAB. **1310.**

Stem unarmed. Leaves somewhat cordate, angulato-dentate, with 3 principal veins from the base. Beaks of the fruit straight, the prickles hooked.

Xanthium strumarium, *E. B.* 2544. *Smith* IV. 136. *Lindley* 151. *Hooker ed.* 2. 401. *ed.* 3. 408. *ed.* 4. 346. *Macreight* 125.

Rare, and probably scarcely naturalized. It has been chiefly met with on waste ground in the vicinity of the metropolis, as at Peckham, Staines, &c., but only occurring in a rich, moist soil, or on dunghills. It is a rank, weed-like plant, chiefly remarkable for its curious inflorescence. The fertile involucres grow in axillary tufts, and are thickly set with hooked prickles, which, when the fruit is ripe, adhere to the garments, and to the coats of animals, like those of the Burdock, *Arctium Lappa*, whence the English name. Annual. Flowers in August and September.

GENUS CCCCLXIX. AMARANTHUS. *Amaranth.*

Nat. Order. AMARANTHACEÆ.

GEN. CHAR. *Barren flower. Calyx* 3- or 5-lobed. *Corolla* none. *Stamens* 3 or 5.—*Fertile flower. Calyx* 3- or 5-lobed. *Corolla* none. *Styles* 3 or 2. *Capsule* of 1 cell, with 1 seed, splitting all round transversely.

The genus is extensive and very widely distributed, some of the species being met with in almost every warm and temperate country throughout the globe. All are annual herbs with alternate, entire leaves, and small green or red flowers: the latter are variously aggregated, spiked, panicled, or capitate; their persistent calyces are remarkable for retaining their living hues after death, hence the generic name from *α, μαραινω*, unfading. Several of the species are very ornamental; *A. hypochondriacus*, Prince's-Feather, *A. caudatus*, Love-lies-bleeding, and a few others, are common garden flowers. The Amaranths are all wholesome and nutritious plants, and are eaten as potherbs in various parts of the world.

AMARANTHUS BLITUM. *Wild Amaranth.* TAB. **1311.**

Stem spreading. Leaves ovate, obtuse. Flowers 3-cleft, triandrous; in small lateral tufts.

Amaranthus Blitum, *E. B.* 2212. *Smith* IV. 137. *Lindley* 213. *Hooker ed.* 2. 401. *ed.* 3. 498. *ed.* 4. 346. *Macreight* 194.

Probably introduced to our gardens from the continent, where it is used as a potherb. It is not unfrequently met with on waste ground among rubbish, and about dunghills in the vicinity of towns, but is certainly not indigenous. Stems spreading horizontally, or ascending. Leaves on long petioles, smooth, sometimes pointed, mostly abrupt, and often emarginate at the apex. Flowering branches axillary, leafy; each bearing a few small tufts of sessile, axillary, green flowers, the barren ones often containing an abortive pistil in the centre. Styles downy, recurved. Annual. Flowers in August.

Genus CCCCLXX. BRYONIA. *Bryony.*

Nat. Order. Cucurbitaceæ.

Gen. Char. *Barren flower. Calyx* 5-toothed. *Corolla* 5-cleft. *Filaments* 3. *Anthers* 5.—*Fertile flower. Calyx* 5-toothed. *Corolla* 5-cleft. *Style* 3-cleft. *Berry* inferior, globose, many-seeded. *Seeds* ovate, compressed, more or less bordered.

Climbing plants, furnished with simple tendrils, alternate, rough leaves, which are more or less palmate or with palmate veins, and greenish-white or yellowish flowers, whose petals are only coherent at the base. The species are chiefly distributed in countries bordering on, or between the tropics. Some are employed medicinally as cathartics and emetics, but their action is too violent, and, generally speaking, they may be regarded as acrid poisons.

BRYONIA dioica. *Red-berried Bryony.* Tab. **1312.**

Leaves palmate, rough on both sides with callous points. Barren and fertile flowers on separate plants.

Bryonia dioica, *E. B.* 439. *Smith* IV. 138. *Lindley* 319. *Hooker ed.* 2. 401. *ed.* 3. 408. *ed.* 4. 346. *Macreight* 84.

Common throughout England in hedges and thickets, among which its rough, angular stems extend to a considerable length during the summer; they are only of annual duration and very little branched. Leaves rather lobed than palmate. Flowers in little, axillary branches, yellowish with green veins. Stamens truly triadelphous, 4 of them being united in pairs, the 5th solitary: anthers curiously flexuose. Fertile flowers never on the same plant with the barren ones, rendering this species an exception to the general monœcious character of its genus. Berry red when ripe, full of a fœtid juice, including 6, slightly compressed, elliptical, spotted seeds. Perennial. Flowers in May.

An elegant plant, and interesting to the English botanist as being the only indigenous example of its natural order. The large, whitish,

branched root is kept at most of our herb-shops, where it may be frequently seen exhibited as a sign, being pruned to a rude effigy of the human figure, a custom probably derived from its being formerly surreptitiously substituted by dealers for that of the famous Mandrake, *Atropa Mandragora*. It had once a tolerable medical repute of its own likewise, but has long since merged into an outward application for bruises, especially black eyes, which however it is apt to blister if applied fresh.

Order VI. HEXANDRIA.

Genus CCCCLXXI. ERIOCAULON. *Pipewort.*

Nat. Order. Restiaceæ.

Gen. Char. *Flowers* collected into a compact, scaly head; the outer scales generally empty and forming an involucrum. —*Barren flowers* in the centre. Perianthium 4- or 6-parted or -cleft; the inner segments united nearly to their summit. *Stamens* 4 or 6.—*Fertile flowers* in the circumference. Perianthium inferior, deeply 4-cleft. *Style* 1. *Stigmas* 2 or 3. *Capsule* 2- or 3-lobed, 2- or 3-celled. *Cells* one-seeded.

Inhabitants of lakes, swamps, and watery places in many parts of the world. They are chiefly remarkable on account of the laxity of their tissue, the whole plant appearing to be composed of tubes intercepted by numerous transverse partitions; hence the English name. Leaves simple, radical. Inflorescence supported on a scape.

ERIOCAULON septangulare. *Jointed Pipewort.* Tab. **1313.**

Scape striated, with about 7 angles; longer than the cellular, compressed, subulate, smooth leaves. Head of flowers convex. Perianth 4-cleft, hairy at the extremities, as are likewise the scales. Stamens 4. Capsule 2-celled.

Eriocaulon septangulare, *E. B.* 733. *Smith* IV. 140. *Lindley* 272. *Hooker ed.* 2. 402. *ed.* 3. 408. *ed.* 4. 346. *Macreight* 244. *Hooker Fl. Lond. new series tab.* 52.

Rare, being only met with in Alpine lakes in the Isle of Skye and a few of the Western Islands of Scotland, and in the district of Connemara on the north-west coast of Ireland. Creeps at the root, throwing out numerous white, curiously articulated fibres, which penetrate deep into the mud. Leaves and scape pellucid, exhibiting very plainly the beautiful cellular structure already alluded to. Flowers minute, each in the axil of an obovate, membranous, concave scale, nearly as long as itself. Two outer segments of the pe-

rianth purplish, the two inner white; all clothed, as well as the scales, with silky, close-pressed hairs, and tufted at the extremities with snow-white club-shaped pubescence. In the barren flower the 2 inner segments are united, forming a tubular, 2-lipped corolla; in the fertile one they are distinct except at the base; in both there is a small sessile, black gland a little below the tip of each. As occurs in many other monœcious and diœcious plants the stameniferous flowers contain abortive stigmas. Perennial. Flowers in August.

Order VII. POLYANDRIA.

Genus CCCCLXXII. CERATOPHYLLUM. *Hornwort.*

Nat. Order. Ceratophylleæ.

Gen. Char. *Barren flower: Calyx* many-parted. *Corolla* none. *Stamens* 12 to 20.—*Fertile flower. Calyx* inferior, many-parted. *Corolla* none. *Germen* solitary. *Style* filiform, curved. *Stigma* simple. *Nut* superior, 1-seeded.

Aquatic, submersed herbs, common in stagnant waters in the northern hemisphere. Their leaves have a cellular texture, are verticillate, and variously divided into acute, filiform, serrated lobes. Flowers small, sessile, axillary.

CERATOPHYLLUM demersum. *Common Hornwort.* Tab. **1314.**

Calyx-segments notched at the extremity. Fruit armed with 2 spines near the base, and terminated by the curved, subulate style.

Ceratophyllum demersum, *E. B.* 947. *Smith* IV. 141. *Lindley* 225. *Hooker ed.* 2. 402. *ed.* 3. 409. *ed.* 4. 347. *Macreight* 81.

A very frequent inhabitant of ponds, ditches, and slow streams. Stems long, slender, floating under water. Leaves more or less densely whorled; their segments setaceous, 2 or 3 times forked, distantly serrated. Flowers small, sessile, verticillated in the axils of the leaves. Anthers sessile, crowded, spotted, 2-beaked, 2-celled. Fruit elliptical: the 2 spine-like processes at its base are probably abortive stamens. Perennial. Flowers in July and August.

CERATOPHYLLUM submersum. *Unarmed Hornwort.* Tab. **1315.**

Segments of the calyx acute, entire. Fruit destitute of spines.

Ceratophyllum submersum, *E. B.* 679. *Smith* IV. 142. *Lindley* 225. *Hooker ed.* 2. 402. *ed.* 3. 409. *ed.* 4. 347. *Macreight* 81.

Found in ditches in the east and south of England. In habit it is somewhat different from the preceding species, being more slender, and the foliage less dense; but the chief distinction is in the absence of the lateral spines on the fruit. Perennial. Flowers in September.

Genus CCCCLXXIII. MYRIOPHYLLUM. *Water-Milfoil.*

Nat. Order. Haloragеæ.

Gen. Char. *Barren flower. Calyx* 4-parted. *Petals* 4, fugitive. *Stamens* generally 8.—*Fertile flower. Calyx* 4-lobed. *Petals* none. *Stigmas* 4, sessile. *Fruit* sessile, separating into 4, subglobose, indehiscent, 1-seeded nuts.

These are aquatic herbs growing, like those of the preceding genus, in stagnant waters throughout Europe and North America, floating and submersed; except in the flowering season, when their extremities appear above the surface. They have finely pectinated, verticillate leaves, and minute reddish, sessile flowers, the upper of which are barren, the lower fructiferous.

MYRIOPHYLLUM spicatum. *Spiked Water-Milfoil.* Tab. **1316.**

Sterile flowers in whorled, interrupted, leafless spikes.

Myriophyllum spicatum, *E. B.* 83. *Smith* IV. 143. *Lindley* 110. *Hooker ed.* 2. 402. *ed.* 3. 409. *ed.* 4. 347. *Macreight* 80.

Frequent in ditches and stagnant pools. Stems slender, very much branched. Leaves 4 in a whorl, spreading, finely pectinated, always submersed. Flowering branches red, standing erect from the surface of the water, slender, 3 to 5 inches long. Flowers in many, more or less distant whorls, rising from the axils of minute verticillated bracteas, corresponding in number and position to the leaves below. Perennial. Flowers in July and August.

MYRIOPHYLLUM verticillatum. *Whorled Water-Milfoil.* Tab. **1317.**

Spike leafy. Flowers all in axillary whorls.

Myriophyllum verticillatum, *E. B.* 218. *Smith* IV. 143. *Lindley* 110. *Hooker ed.* 2. 403. *ed.* 3. 409. *ed.* 4. 347. *Macreight* 80.

Found in ponds and ditches in several parts of the kingdom, as in Norfolk, Cambridgeshire, Cheshire, and the Isle of Anglesea. Leaves 5 in a whorl, their segments less slender than in the last species. Flowering branches clothed to the summit with whorls of wing-cleft or subpectinate leaves. Flowers greenish, in the axils of the leafy whorls, sometimes hermaphrodite, especially about the middle of the spike. Perennial. Flowers in July.

Genus CCCCLXXIV. SAGITTARIA. *Arrow-head.*

Nat. Order. Alismaceæ.

Gen. Char. *Calyx* 3-leaved. *Petals* 3.—*Barren flower.*

Stamens about 24.—*Fertile flower*. *Pistils* very numerous, collected into a globular head. *Pericarps* 1-seeded, compressed, margined.

Aquatic plants, growing erect with their leaves and flowers reaching above the water. Leaves all radical, on long petioles, mostly broad, sagittate or cordate; their veins parallel. Flowers rather large, white or purplish. They are found throughout the northern hemisphere from Lapland to the north of India, and from Canada to Mexico.

SAGITTARIA SAGITTIFOLIA. *Common Arrow-head.* TAB. **1318.**

Leaves arrow-shaped, the lobes acute.

Sagittaria sagittifolia, *E. B.* 84. *Smith* IV. 144. *Lindley* 253. *Hooker ed.* 2. 403. *ed.* 3. 409. *ed.* 4. 347. *Macreight* 222.

A frequent ornament to the margins of rivers, pools, and ditches throughout England and Ireland. It varies in foliage, according probably to the nature of soil or the depth of water, the truly arrow-shape of the leaf, from which both its Latin and English names are derived, being exchanged in some situations for an oval or even linear figure; the latter is generally the case with those which do not rise above the water. Scape triangular, bearing usually from 3 to 5 whorls of flowers, 3 in each whorl. Flowers large, their petals white, with a purple spot or tinge at the base, soon falling off. It seldom occurs that more than the lowest whorl is fertile; the upper flowers being, however numerous, all staminiferous, and the peduncles of these are about twice the length of the others and much more slender, allowing them to droop, and thus facilitating the access of the pollen to the pistils beneath. Perennial. Flowers in July and August.

The rhizoma or underground stem of this plant is large, and, containing a deal of nutritious matter, might be employed as food, as that of a kindred species is in China.

GENUS CCCCLXXV. ARUM. *Cuckow-pint.*

Nat. Order. ARACEÆ or AROIDEÆ.

GEN. CHAR. Spadiceous. *Spadix* cylindrical, naked and club-shaped above, inclosed in a spathe of one leaf which is convolute at the base. *Flowers* naked. *Stamens* crowded, sessile, below the middle of the spadix. *Germens* sessile, crowded about the lower part. *Berry* 1-celled, with many seeds.

A large genus consisting chiefly of herbaceous plants with alternate or radical leaves, sheathing at the base, generally broad and often divided or pedatifid. Their singular inflorescence is well illustrated in our only native species; its most remarkable feature being the large convolute bractea

(spathe), which, involving the whole spike of flowers, supersedes the development of calyx and corolla: its inner surface is often highly coloured.

The Arums are all acrid plants, and poisonous in a recent state; but the acrid principle, being volatile, is dissipated by the action of heat, and their tuber-like underground stem (cormus), consisting chiefly of feculent matter, is readily convertible by baking or boiling into a palatable and highly nutritive food: those of *A. Colocasia*, *A. esculentum*, and some others, are commonly cultivated in tropical countries under the names of Eddoes, Cocoa-roots, and Yams; the true Yam, however, is the root of certain species of *Dioscorea*.

The bursting of the spathe in many of the Arums is accompanied by a considerable evolution of heat. In several experiments by the editor, a thermometer being plunged into that of *A. Dracunculus*, the large Dragon-Arum, a temperature was indicated of from 8 to 12 degrees above that of the surrounding atmosphere. The naked, club-shaped extremity of the spadix in this, in *A. maculatum*, and other species which evolve heat during expansion, has a strong, disagreeable, putrid odour, resembling carrion so closely, that the flesh-flies deposit their eggs upon it.

The Arums are chiefly indigenous to warm and tropical countries.

ARUM MACULATUM. *Common Cuckow-pint. Wake-Robin. Lords-and-Ladies.* TAB. **1319.**

Leaves all radical, halberd-shaped, entire, the lobes deflexed. Spadix club-shaped, obtuse, shorter than the spathe.

Arum maculatum, *E. B.* 1298. *Smith* IV. 146. *Lindley* 246. *Hooker ed.* 2. 403. *ed.* 3. 410. *ed.* 4. 347. *Macreight* 243.

Very common throughout England on hedge-banks and in groves and thickets. Leaves deep-green, glossy, generally sprinkled with dark-purple, irregular spots: the presence of these spots seems to be adventitious and probably depends upon the nature of the soil, as in certain districts the leaves are uniformly green; thus in the immediate vicinity of the metropolis, an unspotted Arum is of rare occurrence on the north or Middlesex side, while on the south or Surrey side, where this plant is equally abundant, a spotted one is no less uncommon. Flower-stalk a scape springing immediately from the fleshy root-like stem, but encased at the lower part by the sheathing petioles. Spathe large, convolute, pale-green, sometimes with a purplish tinge, and rarely with a few pale spots. The base of the spadix or spike-stalk bears several rows of sessile germens, above which is a dense band of sessile, purple, 2-celled anthers, and over these another ring of apparently imperfect germens; the remaining portion is naked, and enlarged at the apex into the form of a club, 2 or 3 inches

long, of a purplish hue, and spongy texture, an appearance probably occasioned by the whole extremity being imperfectly antheriferous in this genus. The germens become an oblong, dense spike of scarlet berries, conspicuous in the autumn and winter months, long after the leaves and the other parts of the spadix have decayed. Perennial. Flowers in April and May.

The farina obtained from the tubers is used in the isle of Portland and adjacent parts as a substitute for bread-flour, whence it is sometimes brought to the metropolis under the name of Portland Sago.

Genus CCCCLXXVI. POTERIUM. *Salad-Burnet.*

Nat. Order. Rosaceæ.—*Tribe.* Sanguisorbeæ.

Gen. Char. *Flowers* capitate, with 3 or 4 scales at the base of each; the upper ones of each head fertile.—*Barren flower. Calyx* with 4 deep segments. *Corolla* none. *Stamens* 30 to 40, with long, flaccid filaments.—*Fertile flower. Calyx* tubular, contracted at the mouth, with 4 deciduous teeth. *Pistils* 2. *Stigmas* tufted. *Pericarps* (akenes) 1-seeded, dry, inclosed in the hardened, quadrangular tube of the calyx.

Perennial herbs, or undershrubs, chiefly confined to Europe and Northern Asia. They have compound, serrated leaves, with stipules adhering to the petiole, and small, purple or greenish, densely aggregated flowers. The species are all wholesome plants, possessing scarcely any property except that of being more or less astringent.

POTERIUM Sanguisorba. *Common Salad-Burnet.* Tab. **1320.**

Stem herbaceous, somewhat angular; without spines.

Poterium Sanguisorba, *E. B.* 860. *Smith* IV. 147. *Lindley* 103. *Hooker ed.* 2. 403. *ed.* 3. 410. *ed.* 4. 348. *Macreight* 70.

Plentiful on most of the dry, hilly pastures of England, especially over chalk and limestone. Root strong and woody. Stems slender, subangular, smooth, leafy, from a few inches to 2 feet in height. Leaves pinnated, with opposite, ovate or roundish, neatly serrated, smooth leaflets. Flowers in globular, terminal heads, barren below, fertile above, dull-purple. Stamens very long, pendent in little tassel-like branches from the lower flowers. Perennial. Flowers in July.

This plant was once cultivated in this country, on the soils where it now chiefly flourishes, as fodder, but has been long superseded by Saintfoin and other more succulent crops. The leaves taste and smell like cucumber, and are much employed on the continent in salads, and occasionally here, whence the English name.

Genus CCCCLXXVII. QUERCUS. *Oak.*

Nat. Order. Amentaceæ, *Juss.* Cupuliferæ, *Richard.*

Gen. Char. *Barren flowers* in a lax, slender, pendulous spike or catkin. *Calyx* 5- to 7-cleft. *Stamens* 5 to 10.—*Fertile flower*. *Involucrum* composed of numerous imbricated scales, united into an hemispherical cup. *Calyx* 6-toothed, closely investing the germen. *Germen* 3-celled; 2 of the cells abortive. *Style* 1. *Stigmas* 3. *Nut* or *acorn* 1-celled, 1-seeded; surrounded at the base by the enlarged coriaceous or woody, cup-shaped involucrum.

The Oaks are generally trees of stately growth, and the majority of these attain a size and stature that renders them no mean rivals of the well-known species identified as the "monarch" of our forests: some, however, are mere shrubs. They have alternate, simple, stipulate leaves, whose edges are mostly serrated, wing-cleft, or lobed, rarely entire; the principal veins run direct from the midrib to the margin. More than 100 species have been described as scattered over the temperate and warmer regions of the northern hemisphere; of these the larger proportion are natives of the American continent.

The wood of many of the Oaks is equal, if not superior, to that of our long-famed British species for its durability as timber. Their bark is extensively employed in dyeing and tanning. Their fruit is edible and nutritious: acorns are a favourite food of swine and many other animals, and, though no longer that of man in this country, where they formerly, as well as in other parts of Europe, were a staple article of subsistence, they are still eaten in Spain and Barbary. Cork is the bark of *Q. suber*, an evergreen species indigenous to the south of Europe. Even the diseases and casualties of this noble race of trees are sources of benefit to mankind. Galls are excrescences produced upon *Q. infectoria*, and probably other allied species, whose fruit-buds are thus altered by being made the nidus of an insect; they are the most powerful vegetable astringent known, and are variously employed in the arts as well as medicinally. The grains known in commerce by the name of "Kermes" consist of an insect, *Coccus ilicis*, which feeds upon the leaves of *Q. coccifera*, an oak largely cultivated for this purpose in Spain and the south of France: prior to the introduction of the Cochineal, *Coccus Cacti*, Kermes yielded our principal scarlet dye and are still in extensive demand.

QUERCUS PEDUNCULATA. *Common British Oak.* TAB. **1321.**

Leaves deciduous, oblong, wider towards the apex; deeply sinuate, their sinuses rather acute, their lobes obtuse; nearly sessile. Fruits 2 or 3, sessile upon a long peduncle.

Quercus Robur, *E. B.* 1342. *Smith* IV. 149. *Lindley* 240. *Hooker ed.* 2. 403. *ed.* 3. 410. *ed.* 4. 348. *Macreight* 216. Q. pedunculata, *Willdenow.*

The most common, and probably the only aboriginal Oak belonging to these islands, as all the most ancient and remarkable trees now extant are of this species. Botanists not being agreed in the assignment of the specific name "*Robur*," most foreign authors applying it to our *Q. sessiliflora*, we have adopted the above in preference, the long stalk which supports the acorns being the chief feature of distinction. Leaves somewhat obovate, smooth and shining above, a little glaucous beneath, occasionally with short petioles, especially towards the ends of the branches. Flowers about the end of April.

Of the two species of Oak met with in our woods and forests, one is generally admitted to yield a timber of far inferior quality to the other, but so indiscriminately have the trees been mingled in the making and renewal of plantations that it is at present a question to which the palm is due. Opinion is at present in favour of *Q. pedunculata*, which from its predominance in our oldest forests may undoubtedly be considered the staple tree of this country.

QUERCUS SESSILIFLORA. *Sessile-fruited Oak.* TAB. **1322.**

Leaves deciduous, oblong; deeply sinuate, their sinuses rather acute, the lobes opposite, obtuse; petioles more or less elongated. Fruits clustered, sessile, or nearly so.

Quercus sessiliflora, *Salisbury.—E. B.* 1845. *Smith* IV. 150. *Lindley* 240. *Hooker ed.* 2. 404. *ed.* 3. 410. *ed.* 4. 348. *Macreight* 216. Q. Robur, *Willdenow*, and most foreign botanists.

This species, though tolerably abundant in many parts of the kingdom, especially in the southern counties of England, and elsewhere in plantations of comparatively recent standing, is far from being so universally distributed here as the last; from which the sessile, clustered fruit, and petiolate leaves readily distinguish it. A handsome tree, more vigorous in its growth, and arriving sooner at maturity than *Q. pedunculata.* It yields likewise a more plentiful crop of acorns and commences bearing at a much earlier age in most situations. Flowers in May.

The wood is considered generally to be inferior to that of the last for ship-building, being softer and less durable; circumstances which might be expected from its more rapid growth. The contrary is affirmed by some recent authors, but it is to be feared that sufficient observation may yet be wanting to decide a point of so much importance. It is said to have been originally introduced into Britain from the continent.

Genus CCCCLXXVIII. FAGUS. *Beech.*

Nat. Order. Amentaceæ, *Juss.* Cupuliferæ, *Richard.*

Gen. Char. *Barren flowers* in a pendulous, globose, dense catkin. *Calyx* campanulate, 6-cleft. *Stamens* 5 to 12.—*Fertile flowers* 2 together, within a 4-lobed, spiny involucrum. *Calyx* urceolate, with 4 to 6 teeth, incorporated with the germen. *Germen* 3-celled; 2 of the cells abortive. *Styles* 3. *Nuts* triangular, by abortion 1-celled, 1- or 2-seeded; invested by the enlarged, spiny involucrum.

A few handsome trees are included in this genus, of which one only is a native of Europe, the remainder indigenous to the western continent. Leaves simple, alternate, the principal veins extending straight to the margin. Stipules deciduous.

FAGUS sylvatica. *Common Beech.* Tab. **1323.**

Leaves ovate, glossy, obsoletely toothed, ciliated on the margin.
Fagus sylvatica, *E. B.* 1846. *Smith* IV. 152. *Lindley* 239. *Hooker ed.* 2. 404. *ed.* 3. 411. *ed.* 4. 348. *Macreight* 216.

This beautiful tree is common in the southern and middle counties of England, but less frequent toward the northern parts of the kingdom. Its natural habitat is upon the hills of the great chalk districts, where it forms extensive woods almost to the exclusion of other trees, few of which will grow where the Beech flourishes; a circumstance owing to its roots spreading horizontally and not requiring that depth of soil which is necessary for the support of trees of ordinary habit. It is on this account that a Beech forest is never encumbered with underwood, or with the rank herbage that overruns those consisting of Oaks and others whose roots penetrate deeply into the earth. Bark smooth. Leaves waved, shining, scarcely serrated. Barren catkins on long peduncles. Stamens generally about 8 in each flower. Fertile flowers terminating the branches. Flowers in April and May.

Few trees bear clipping better than this, hence it is much employed for hedges in nursery grounds and other places where shelter is desirable, a purpose to which it is well adapted, the faded foliage remaining through the winter. The wood is very close-grained, and valued for many useful purposes; wheel-cogs and various articles of machinery, tool-handles, turnery-ware, &c. are manufactured of Beech-wood; but it will not bear long exposure to the weather, and is therefore unfitted for building. It lasts however for a considerable time under water especially when constantly submerged. The fruit, called Beech-mast, is eaten by swine; it contains a considerable quantity of oil.

Several varieties of the Beech are met with in our parks and shrubberies, of which the Fern-leaved Beech, whose leaves are almost linear, and the Copper Beech, which has them of the ordinary figure but of a deep-purple hue, are the most remarkable.

Genus CCCCLXXIX. CASTANEA. *Chestnut.*

Nat. Order. Amentaceæ, *Juss.* Cupuliferæ, *Richard.*

Gen. Char. *Barren flowers* irregularly clustered in long, pendulous catkins. *Calyx* 6-cleft. *Stamens* 5 to 20.—*Fertile flowers* generally 3 together, within a 4-lobed involucrum, which is thickly covered with hard, branching spines. *Calyx* urceolate, 5- or 6-lobed, incorporated with the germen, lined on the inside with a stiff down. *Stamens* 12, red, abortive. *Germen* 6-celled; cells 2-seeded; 5 of the cells generally abortive. *Styles* 6. *Nuts* roundish, 1-celled, 1- or 2-seeded; invested by the enlarged involucrum.

A small genus consisting of trees and shrubs scattered over the northern hemisphere; resembling in the general character of their foliage *Fagus*, with which they were originally combined, and the rest of the *Cupuliferæ*. They all yield a sweet, edible and nutritious fruit, especially *C. vulgaris*, the common Chestnut, and *C. pumila*, the Chinquapin of North America.

CASTANEA vulgaris. *Spanish Chestnut. Common Chestnut.*

Tab. **1324**.

Leaves oblongo-lanceolate, acuminate, with mucronate serratures, smooth on both sides.

Fagus Castanea, *Linn. E. B.* 886. *Smith* IV. 151. Castanea vesca, *Gærtner. Lindley* 239. C. vulgaris, *Hooker ed.* 2. 404. *ed.* 3. 411. *ed.* 4. 348. *Macreight* 216.

This beautiful forest tree, which abounds in all the southern parts of Europe, in Asia Minor, and the southern states of North America, can scarcely be considered as a native of Britain, though, introduced at an early period, it has become naturalized in woods in the southern and western counties of England. The bark is widely and deeply cleft, especially in old trees. Foliage deep-green, glossy, appearing more like that of an evergreen than a deciduous tree. Both fertile and barren flowers grow on long pendulous stalks; they appear in May, and the fruit is ripe in September.

The Chestnut is a favourite in parks and plantations, its foliage contrasting well with that of most other trees. It lives to a great age, and some individuals of the species may rank among the oldest vegetable existences upon the globe; as, leaving out of the question the equivocal "Castagno di Cento Cavalli" on Mount Etna, whose divided trunk measures 160 feet in circumference, we have one in our own island, a landmark on the manor of Tamworth, now Tortworth, in Gloucestershire, which in the year 1135 was referred to, in writings still extant, as "The great Chestnut," the circumference of whose trunk is now upwards of 52 feet, and which has been computed to be upwards of 1000 years old.

The wood is hard and equally durable with that of the oak. The nuts are a common article of daily food in the south of Europe, where they are eaten roasted, boiled in milk, or ground into meal and made into bread, cakes, &c.

Genus CCCCLXXX. BETULA. *Birch.*

Nat. Order. Amentaceæ.

Gen. Char. *Catkins* elongated, cylindrical. *Flowers* naked, the scales excepted.—*Barren flower. Scales* of the catkin ternate, the middle one bearing the stamens. *Stamens* 10 to 12.—*Fertile flower. Scales* of the catkin 3-lobed, 3-flowered, membranous, deciduous. *Styles* 2. *Germen* compressed, 2-celled, 1 of the cells usually abortive. *Nut* compressed, with a membranous margin, 1-seeded.

Trees or shrubs, distributed over the cold and temperate countries of the northern hemisphere, out of which only a single species has been hitherto discovered, inhabiting the island of Terra del Fuego, viz. *B. antarctica*. They have alternate, simple, serrated, stipulate, deciduous leaves, whose primary veins run straight from the midrib to the margin, like those of the *Cupuliferæ*. Many of the Birches form noble trees from 60 to 80 feet in height, while a few are mere bushes.

The timber of the larger species is valuable, especially that of *B. lenta*, the Black Birch of North America, imported to this country under the name of American Birch; from the beauty and excellence of its wood it is called in the United States, Mountain Mahogany. Of the bark of *B. papyracea* the Indians of Canada construct their portable canoes; it is so light that a vessel capable of carrying four persons scarcely weighs 50 pounds.

BETULA alba. *Common Birch.* Tab. **1325**.

Leaves ovate, acute, somewhat deltoid, doubly serrated, nearly smooth. (Branches erect; when young, pubescent.)

Betula alba, *E. B.* 2198. *Smith* IV. 153. *Lindley* 229. *Hooker ed.* 2. 405. *ed.* 3. 411. *ed.* 4. 349. *Macreight* 208.

Frequent in woods, especially in the heathy, mountainous districts of the north. Few soils are too poor for the support of this elegant tree, which seems to thrive as well in the dry sand as in the richest garden mould. Trunk seldom reaching above 40 feet in height in this country. Bark silvery-white, deciduous, in paper-like layers while young, when old rugged. Leaves somewhat triangular, the apex very acuminate, occasionally subpubescent. Catkins all drooping; scales of the fertile ones deciduous. Flowers in April and May.

The wood of this species is white, tough, but not very durable; many light articles are manufactured from it, and it yields an excellent charcoal. The use of the twigs for besoms and other implements is well known. A brisk and pleasant wine is sometimes prepared from the sap, which may be obtained in considerable quantity by tapping the trees in spring. During the siege of Hamburgh in 1814, almost all the Birch-trees in its vicinity are said to have been destroyed, in consequence of their sap being drawn off by the Russian soldiers for this purpose. The bark of the Birch, easily separable into thin layers, was one of the earliest materials employed for writing upon by the nations of northern Europe. In Russia an empyreumatic oil is obtained from it by distillation, to which the leather so much in request for book-binding is said to owe its peculiar odour. Independently of this short detail, a volume might be written upon the œconomical history of the Birch-tree.

BETULA PENDULA. *Weeping Birch.*

Branches pendulous; when young, smooth and warted.
Betula pendula, *Roth, and Lindley* 229.

Is generally considered to be a mere variety of the foregoing. It is not unfrequent in mountainous districts, and especially in the Highlands of Scotland. Its pendent branches, not thicker than common packthread, are often 30 or 40 feet in length.

BETULA NANA. *Dwarf Birch.* TAB. **1326.**

Leaves orbicular, crenated, reticulated with veins beneath. Catkins erect.
Betula nana, *E. B.* 2326. *Smith* IV. 154. *Lindley* 229. *Hooker ed.* 2. 405. *ed.* 3. 412. *ed.* 4. 349. *Macreight* 208.

This is the smallest of the Birches, being often scarcely a foot in height. It is one of the few woody plants that are met with in high northern latitudes, and is not unfrequent in the Highlands of Scotland. A rigid, much-branched shrub with dark-coloured bark. Leaves on short petioles, deep-green, nearly circular, strongly serrated. Barren catkins lateral, sessile, cylindrical, dark-brown, about $\frac{1}{3}$ of an inch in length, flowering in May when the leaves begin to expand: fertile ones terminating short lateral shoots, with about 2 little leaves at the base; they are ovate, shorter than the former, and green, with red styles.

It is a valuable plant in the œconomy of the Laplander, the slender, elastic branches, covered with a reindeer's skin, serving him for a seat by day and a bed at night; while in some parts of his dreary and inhospitable climate it is almost the only article for fuel that is to be met with. The catkins are the favourite food of the Grouse and Ptarmigan, and, with those of *B. alba*, are considered to be the chief attraction to them and other birds which resort in such numbers to the high northern countries in which these plants abound.

Genus CCCCLXXXI. CARPINUS. *Hornbeam.*

Nat. Order. Amentaceæ, *Juss.* Cupuliferæ, *Richard.*

Gen. Char. *Barren flowers* in an elongated, cylindrical, pendulous catkin, whose scales are roundish and ciliated at the base. *Stamens* 8 to 20, somewhat bearded at the apex. —*Fertile flowers* in a lax, pendulous catkin; scales becoming large and foliaceous, 3-lobed. *Calyx* urceolate, 6-toothed, incorporated with the 2-celled germen; of which 1 cell is abortive. *Styles* 2. *Nut* hard, ovate, 1-seeded.

Trees of middling size, resembling the Beeches in habit and foliage, but differing in the fertile inflorescence, the cupule being imperfect and not encompassing the fruit. Five species are known, which are all natives of the northern hemisphere, viz. 1 European, 1 American, 1 in Asia Minor, and 2 on the Nepaul mountains of India.

CARPINUS Betulus. *Common Hornbeam.* Tab. **1327.**

Scales or bracteas of the fruit oblong, serrated, with 2 smaller lateral lobes.

Carpinus Betulus, *E. B.* 2032. *Smith* IV. 156. *Lindley* 240. *Hooker ed.* 2. 405. *ed.* 3. 412. *ed.* 4. 349. *Macreight* 217.

A common tree in woods and hedges. In Essex it abounds; the ancient forests of Epping and Hainault are principally composed of it. Trunk invested with a pale grey, smoothish bark, seldom attaining the height of 30 feet. Leaves alternate, ovate or heartshaped, pointed, doubly serrated, with very straight, parallel veins, which are hairy at the base; beautifully plaited while young. Barren catkins lateral, tawny, composed of large, roundish-ovate, pointed, ciliated scales, including several smaller ones. Stamens 8 to 12 generally. Fertile flowers in terminal, loose, bracteated clusters rather than catkins, each bractea accompanied by several narrow, internal, deciduous ones. As the fruit ripens, each acquires its separate stalk; its bractea becomes enlarged and leaf-like, bearing the sessile, ovate nut at its base. Flowers in April and May.

The wood is white, very tough and hard, applicable to various purposes, but chiefly employed in the construction of agricultural implements, especially yokes for oxen, whence the English name Horn-beam, as well as the generic Carpinus, from the Celtic *car*, wood, and *pin*, head. It burns like a candle, and is much used as fuel in several parts of Europe. In Sweden a yellow dye is obtained from the inner bark. The tree bears clipping as well as the Beech, and, retaining its withered leaves through the winter, is as well adapted for hedges and screens.

Genus CCCCLXXXII. CORYLUS. *Hazel.*

Nat. Order. Amentaceæ, *Juss.* Cupuliferæ, *Richard.*

Gen. Char. *Barren flowers* in pendulous, cylindrical cat-

kins; scales 3-lobed, deltoid, the middle lobe larger and covering the 2 lateral ones. *Stamens* 8. *Anthers* 1-celled. —*Fertile flowers* clustered, numerous, inclosed in a scaly bud. *Stigmas* 2. *Germen* 2-celled, one usually abortive. *Nut* ovate, smooth, 1-seeded, invested at the base by the enlarged united, coriaceous scales of the involucrum.

Bushy shrubs with alternate, simple leaves, deciduous stipules, pendulous catkins, and cupulated, edible nuts. Natives of Europe and North America.

CORYLUS Avellana. *Common Hazel.* Tab. **1328.**

Twigs hairy. Stipules oblongo-ovate, obtuse. Leaves roundish-cordate, pointed. Involucrum of the fruit campanulate, torn at the margin.

Corylus Avellana, *E. B.* 723. *Smith* IV. 157. *Lindley* 240. *Hooker ed.* 2. 405. *ed.* 3. 412. *ed.* 4. 350. *Macreight* 216.

Common in hedges and woods throughout the kingdom. Young branches clothed with reddish hairs. Leaves downy, their principal veins parallel, extending straight to the margin, which is doubly serrated and more or less obscurely lobed. Catkins generally 2 together, formed during the summer previous to their development. Anthers about 8 to each scale. Styles crimson; about 12 or 14 usually projecting from each fertile bud. Cupule in the wild plant shorter than the ripe nut. Flowers in March and April.

The Filbert, the Cob- and Barcelona-nuts, with several other varieties met with at our tables, are supposed to have been derived from this species by cultivation. The wood is useful for many purposes, that of the root often affords beautiful specimens for inlaying; the long, straight shoots are manufactured into fishing-rods and walking-sticks, crates, hoops for casks, hurdles, and employed for binding thatch. It is extensively grown as underwood for these and other uses, especially for making charcoal. An oil is expressed from the nuts for the use of painters; and, properly prepared, the Hazel-wood is said to yield the best charcoal for drawing.

Order VIII. MONADELPHIA.

Genus CCCCLXXXIII. PINUS. *Fir.*

Nat. Order. Coniferæ.

Gen. Char. *Barren flowers* in crowded, racemose catkins; the scales peltate, bearing 2, 1-celled anthers.—*Fertile flowers* forming ovate catkins; the scales closely imbricated, 2-flowered. Ripe catkin a cone or strobilus; the scales of which are oblong, clavate, woody, and angularly umbilicate at the apex. *Nuts* 2 at the base of each scale, 1-seeded,

terminating above in a long, membranaceous, wing-like appendage.

The magnificent genus Pinus of Linnæus has been separated by most modern botanists into 3, viz.,

1. Pinus, the Firs: characterized by their leaves growing 2 or more together from a membranous sheath, and by the scales of their cones being woody, club-shaped and angular at the apex.
2. Larix, the Larches and Cedars: whose leaves grow in tufts or fascicles, but whose cone-scales are submembranous and thin at the apex.
3. Abies, the Spruce Firs: whose leaves are solitary. Their cones resemble those of Larix. Their growth is always pyramidal.

The whole natural order to which these belong consists of trees and shrubs abounding in resin. The Pines and their congeners have all linear leaves, and are evergreen, with the exception of the Larches properly so called: their fructification differs little but in the size and form of the cone and the texture of its scales; and their general habit strikingly distinguishes them from the Amentaceous orders of trees, of whose fruit the cone may be regarded as a modification. They are abundantly distributed over the northern hemisphere; certain species composing immense forests in both continents, extending even within the arctic zone; while others occupy the mountain ranges of India and Mexico, and form a barrier between the exuberant vegetation of the tropical plains and the limits of perpetual snow. Very few are found in sultry climates, or in the southern hemisphere.

Few trees attain a stature at all deserving comparison with these; some individuals of the genus Pinus, indeed, may rank as the giants of the vegetable kingdom. In Canada, the Weymouth Pine, *P. Strobus*, has been found from 200 to 300 feet in height, with a circumference of 50 to 60 feet, measured round the base of its trunk; and a specimen of *P. Lambertiana* found by Mr. Douglas in California, blown down, measured 250 feet in length, and 57 feet 9 inches in girth at 3 feet above the ground. The age required for this enormous growth is not on record, but upwards of 1500 layers of wood have been counted in the trunk of a Weymouth Pine felled in Canada.

The wood of most of the species is more or less valuable as timber, and is known in commerce by the name of "Deal." Pitch, Tar, Turpentine and Resin of various kinds and qualities are among the most useful products of the family. Only one species of Pine is indigenous to the British Islands.

PINUS SYLVESTRIS. *Scotch Fir.* TAB. **1329**.

Leaves in pairs, rigid. Crest of the anthers very small. Cones ovato-conical, generally in pairs; young ones stalked, recurved.

Pinus sylvestris, *E. B.* 2460. *Smith* IV. 158. *Lindley* 241. *Hooker ed.* 2. 406. *ed.* 3. 412. *ed.* 4. 350. *Macreight* 219.

Found constituting vast natural forests among the Highlands of Scotland. Leaves glaucous, always developed in pairs with a membranous sheath surrounding their base: each pair may be regarded as resulting from a rudimentary branch, as is likewise the case with the clustered leaves of other species of Pinus, and of the Larch and Cedar; the membranous sheath being no other than the leaf to which this abortive branch is axillary. The fact may be readily ascertained by observing the growth of the common Larch in the spring, when the leaves at the extremities of the branches at first come out in fascicles, as the lateral ones always do, but the former become solitary by being removed from each other by the lengthening of the young shoot to which they belong. Catkins yellow, lengthening after flowering into branches. Cones generally 2 together, ripening the second year, tubercled, not spinous. Flowers in May and June.

This species presents several varieties. It furnishes the best red or yellow deal, as well as a large proportion of the pitch, tar and turpentine brought into the European markets. The bark is sometimes used in tanning, for which it is said to be well adapted: dried and reduced to powder it forms the Bark-bread of the Norwegians, Laplanders, and other northern Europeans.

CLASS XXII. DIŒCIA.

ORDER I. DIANDRIA.

In Salix, the only British genus of this order, the number of stamens in each flower varies from 1 to 5, although generally there are only 2.

GENUS CCCCLXXXIV. SALIX. *Willow, Osier and Sallow.*

Nat. Order. AMENTACEÆ, *Juss.* SALICACEÆ, *Lindley.*

GEN. CHAR. *Scales* of the catkin imbricated, single-flowered. *Calyx* none. A nectariferous gland at the base of the stamens or ovary.—*Barren plant. Stamens* generally 2; sometimes 1, 3, or 5; (when monandrous, it is only in con-

sequence of the 2 stamens being united, and the anther will be found double or 4-celled).—*Fertile plant.* *Stigmas* 2, often cleft. *Capsule* 1-celled, 2-valved, many-seeded. *Seeds* covered with down (comose).

About 200 species of Willow are known. They are distributed over the whole northern hemisphere from the vicinity of the Pole in Greenland and Spitzbergen to that of the Equator in Senegal and Colombia; very few are met with to the south of the Line. All of the species are arborescent, varying, however, in stature from trees of moderate height to the most diminutive of shrubs; *S. herbacea* being only from 1 to 3 inches high, while *S. triandra*, *S. Russelliana* and others form trees of from 30 to 60 feet.

The œconomical uses of the Willows are numerous: some of the larger kinds afford timber of no despicable quality, and the flexible twigs and branches of most may be adapted to the making hoops, crates and basket-work; many, indeed, of the bushy species are cultivated for the latter purpose under the name of Osiers. The wood forms an excellent charcoal, which is esteemed superior to all other for the manufacture of gunpowder, that of the Alder only excepted. Willow-bark is of equal value with that of the Oak for tanning, and contains beside an alkaloid, named *Salicine*, which is likely to rival the *Quinine* of the Peruvian Bark in its medical importance.

No genus throughout the whole vegetable kingdom is more difficult of study than Salix: the numerous species present, under different circumstances, so much diversity of character, that many of the most eminent botanists are undecided as to the true limits of their variation; many distinct species being considered mere varieties resulting from difference of soil and situation by one party, while by another undoubted varieties are exalted into the rank of species. Leaves alternate, simple, the principal veins deliquescent or dividing before they reach the margin. Stipules sometimes absent or small and deciduous, or gland-like, or more frequently leafy and persistent.

The following arrangement is that of Mr. Borrer, as adopted by Sir W. Hooker in the British Flora.

1. MONANDRÆ.

Trees of low stature, or shrubs, with more or less lanceolate, serrated leaves, which are often broadest toward the apex. Catkins very compact. Filament 1, bearing a double or 4-celled anther; except in *S. rubra*, in which it is forked

at the top and bears 2 distinct anthers. All of the species are valuable as Osiers for basket-work, &c.

SALIX PURPUREA. *Bitter Purple Willow.* TAB. **1330.**

Branches decumbent. Leaves lanceolate, broadest upwards, attenuated below, serrated, smooth. Stipules none. Stamen one. Germen ovate, pubescent, sessile. Stigmas ovate, very short, nearly sessile.

Salix purpurea, *E. B.* 1388. *Smith* IV. 187. *Lindley* 232. *Hooker ed.* 2. 410. *ed.* 3. 417. *ed.* 4. 354. *Macreight* 212.

A small shrub with spreading, decumbent, purple branches, occasionally met with in low meadows, as between Thorpe and Norwich. Leaves glaucous beneath. Catkins small, rather slender, with obtuse scales that are deep-purple or blackish at the tips; the fertile ones very compact. Flowers in March and April.

Its bark is intensely bitter; hence the species is recommended for plaiting into low, close fences for inclosures liable to the depredations of hares and rabbits, neither of which will touch it. The twigs are flexible, and as well adapted for basket-work as those of the following.

SALIX HELIX. *Rose Willow.* TAB. **1331.**

Branches erect. Leaves lanceolate, pointed, broadest at the upper part, attenuated below, slightly serrated, very smooth. Stipules none. Stamen 1. Germen oblongo-ovate, sessile, very pubescent. Style about as long as the linear, cloven stigmas.

Salix Helix, *E. B.* 1343. *Smith* IV. 188. *Lindley* 232. *Hooker ed.* 2. 410. *ed.* 3. 417. *ed.* 4. 354. *Macreight* 212.

Not uncommon in marshes and on the banks of rivers, where, left to its natural growth, it forms a small tree with erect, smooth, glossy, yellowish branches: a habit that distinguishes it at first sight from the preceding, of which some botanists consider it only a variety. The catkins too are larger, the germen more elongated, there is an evident style, and the stigmas are narrower and bifid. Flowers in March and April.

SALIX LAMBERTIANA. *Boyton Willow.* TAB. **1332.**

Branches erect. Leaves lanceolate, broadest upwards, serrated, smooth. Stipules none. Stamen 1. Germen sessile, ovate, very pubescent. Stigmas very short, ovate, notched.

Salix Lambertiana, *E. B.* 1359. *Smith* IV. 190. *Lindley* 232. *Hooker ed.* 2. 411. *ed.* 3. 417. *ed.* 4. 354. *Macreight* 212.

Found on the banks of rivers in several parts of England, as at Boyton, Wilts, where it was first noticed by A. B. Lambert, Esq., at Staines, near Henley upon Thames, &c. A shrub or small tree, not much unlike the last in general aspect, but distinguished b the glaucous, purplish hue of its twigs, leaves broader at the base, smaller catkins, and short, sessile stigmas. Flowers in April.

It is occasionally cultivated as an Osier.

SALIX Woollgariana. *Woollgarian Willow.* Tab. **1332***.

Branches erect. Leaves cuneato-lanceolate, minutely serrated, smooth. Stipules none. Stamen 1. Germen sessile, ovate, very pubescent. Stigmas short, obtuse, nearly sessile.

Salix Woollgariana, *Mr. Borrer in E. B. Supp.* 2651. *Hooker ed.* 2. 411. *ed.* 3. 417. *ed.* 4. 355. *Macreight* 212.

Met with about Lewes in Sussex, and at Kingston upon Thames, but doubtful if indigenous. A shrub or small tree from 10 to 15 feet high, with straight, smooth, polished, yellowish-grey twigs. Leaves light-green, less glaucescent than those of *S. Lambertiana*, and more attenuated towards the base. The catkins are twice as large as in that species, less crowded with flowers and much softer. From *S. Helix* it differs in the form of the leaves, and more especially in the obtuse, scarcely emarginate stigma. Flowers in April.

"Whether *S. Helix*, *S. Woollgariana*, *S. Lambertiana*, and a fourth Willow which the late Mr. Anderson regarded as *S. amnicola* of Walker, should be held truly distinct, or mere seminal varieties of one species, is a question on which botanists will still continue to differ in opinion, and which, we may venture to affirm, no one is qualified to decide. *S. purpurea*, few who know it will hesitate to distinguish." *Borrer, E. B. Supp.* 2651.

SALIX Forbyana. *Fine Basket Osier.* Tab. **1333**.

Branches erect. Leaves lanceolate-oblong, acute, finely serrated, smooth, glaucous beneath. Stipules small, downy. Stamen 1. Style about equal in length to the linear, divided stigmas.

Salix Forbyana, *E. B.* 1344. *Smith* IV. 191. *Lindley* 232. *Hooker ed.* 2. 411. *ed.* 3. 418. *ed.* 4. 355. *Macreight* 212.

Not unfrequent in Osier-holts and low meadows in the eastern counties of England, where, however, the female plant only seems to have been observed; hence it must be regarded as an introduced species. Branches yellowish-green, glossy. Leaves more truly lanceolate than in *S. Helix*, which in fructification it somewhat resembles. Stipules small, lanceolate, acute, often absent. Flowers in April.

Highly valuable as an Osier for the finer kinds of basket-work.

SALIX rubra. *Green-leaved Osier.* Tab. **1334.**

Leaves linear-lanceolate, acute, minutely serrated, smooth, green on both sides. Stamens 2, monadelphous. Stigmas ovate, undivided.

Salix rubra, *E. B.* 1145. *Smith* IV. 191. *Lindley* 232. *Hooker ed.* 2. 412. *ed.* 3. 418. *ed.* 4. 355. *Macreight* 212.

Met with in low meadows and Osier-holts in several parts of England, but not general. A small tree when not cut down as an Osier. Branches long, slender, smooth, purplish. Leaves about 4 inches long, linear-lanceolate, broader in the fertile plant, grass-green on both sides. Stipules generally absent. Fertile catkins scarcely an inch in length, obtuse; their scales elliptical, hairy, purple. Germen oblongo-ovate, sessile, very pubescent; the gland at its base yellow, cylindrical, abrupt. Flowers in April and May.

2. TRIANDRÆ.

Generally trees with deciduous bark. Leaves lanceolate or subovate, serrated, smooth. Stipules leafy, serrated. Catkins more or less lax. Stamens 3. Germens stalked, mostly smooth. Most of the species form excellent Osiers.

SALIX UNDULATA. *Sharp-leaved triandrous Willow.* TAB. **1335.**

Leaves lanceolate, tapering towards each end, serrated, smooth. Stamens 3. Germen stalked, ovato-acuminate, smooth. Style as long as the linear, bifid stigmas.

Salix lanceolata, *E. B.* 1436. *Smith* IV. 168. *Lindley* 230. S. undulata, *Ehrhart. Hooker ed.* 2. 412. *ed.* 3. 419. *ed.* 4. 356. *Macreight* 211.

Found near Lewes in Sussex, and in Angus-shire, but a doubtful native. It forms a small tree, which, like all the following species of this section, casts its bark annually. Leaves very long; their petioles decurrent, or extending down the branch. Stipules acuminate, broad at the base. Scales of the catkins oblong, yellow, very hairy. Flowers in April and May.

Occasionally cultivated as an Osier for making hampers and brown baskets, but not calculated for finer manufactures, the rods when peeled being apt to split in working.

SALIX TRIANDRA. *Long-leaved triandrous Willow.* TAB. **1336.**

Leaves oblongo-lanceolate, acute, serrated, smooth. Stamens 3. Germen stalked, oblongo-ovate, smooth. Stigmas sessile, retuse, cloven.

Salix triandra, *E. B.* 1435. *Smith* IV. 166. *Lindley* 229. *Hooker ed.* 2. 412. *ed.* 3. 419. *ed.* 4. 356. *Macreight* 211.

Common in wet woods and hedges, where it frequently becomes a large tree, 20 to 30 feet high. The bark of the trunk and branches scale off annually in patches, as in the Plane-tree. Leaves of equal breadth except at the extremities; their base not rounded. Stipules ovate or rounded, crenated. Catkins cylindrical, yellow. Flowers in May, and frequently again in August.

Abundantly cultivated as an Osier, and considered one of the most valuable, its rods being very pliable and growing to 8 or 10 feet in length.

SALIX HOFFMANNIANA. *Short-leaved triandrous Willow.* TAB. **1336*.**

Leaves shortly and broadly lanceolate, acute, serrated, smooth; slightly rounded at the base. Stamens 3. Germen stalked, ovate, compressed, smooth. Stigmas nearly sessile.

Salix Hoffmanniana, *E. B. Supp.* 2620. *Smith* IV. 168. *Lindley* 229. *Hooker ed.* 2. 413. *ed.* 3. 420. *ed.* 4. 357. *Macreight* 211.

A much-branched shrub, or small crooked tree, scarcely ever exceeding the height of 12 feet. The sterile plant is not uncommon on

the sides of rivulets in Sussex, but as the fertile one is scarcely known here, it cannot be regarded as a native species. Bark of the stem and larger branches deciduous as in the other triandrous Willows. The more humble growth, the short, flat, lanceolate leaves, more rounded at the base; with the larger, rounded, ear-shaped stipules, distinguish the plant from *S. triandra*, with which it is said to agree in the fertile flowers, as it does in wanting the deep furrows of the young twigs, so remarkable in *S. amygdalina*. Flowers in May.

SALIX AMYGDALINA. *Almond-leaved Willow.* TAB. **1337.**

Young branches furrowed. Leaves oblongo-ovate, acute, rounded at the base, serrated, smooth. Stipules large. Stamens 3. Germen stalked, ovate, smooth. Stigmas sessile, notched.

Salix amygdalina, *E. B.* 1936. *Smith* IV. 169. *Lindley* 230. *Hooker ed.* 2. 413. *ed.* 3. 420. *ed.* 4. 357. *Macreight* 211.

Found on the banks of rivers and ditches in several parts of the kingdom, especially in the east of England, and occasionally cultivated as an Osier. When allowed to grow it will form a large and handsome tree 20 to 30 feet high. Bark deciduous in the autumn. Young branches yellowish, remarkably furrowed. Leaves rather oblique, and rounded at the base, not sloped off gradually as in *S. triandra*. Barren catkins yellow, cylindrical: fertile ones green. Germen on a long stalk, compressed. Flowers in May and often a second time in August.

3. PENTANDRÆ.

Trees of moderate size, with broad, glossy, fragrant foliage, exuding a resin from the glandular serratures of the leaves. Stamens usually 5, sometimes more numerous, projecting in tufts from the long catkins, which are in perfection at the same time as the foliage, rendering the tree highly ornamental. Germen smooth.

SALIX PENTANDRA. *Sweet Willow. Bay-leaved Willow.* TAB. **1338.**

Leaves elliptico-lanceolate or ovate, acuminate, with glandular serratures, and several glands at the base, smooth. Stamens about 5. Germen lanceolate, smooth, nearly sessile. Stigmas nearly sessile, bifid.

Salix pentandra, *E. B.* 1805. *Smith* IV. 171. *Lindley* 230. *Hooker ed.* 2. 414. *ed.* 3. 420. *ed.* 4. 357. *Macreight* 211.

Not unfrequent on the banks of rivers throughout the kingdom, but especially in the north of England and south of Scotland. It is usually a small tree 15 to 20 feet high, with broad, more or less ovate, glossy leaves, much acuminated toward the apex, and closely crenated on the margin, with a yellow, fragrant gland at each notch, the sources of the bay-like scent for which the plant is remarkable. Petioles glandular at the base of the leaf. Stipules mostly absent.

Male catkins yellow, handsome, fragrant. Stamens often 6 to 9 in each scale. Flowers in May and June.

The most beautiful of all the Willows, and on that account much cultivated as an ornamental tree.

4. FRAGILES.

Trees, generally of considerable size, with lanceolate, serrated, smooth, stipulate leaves, and very lax catkins. Stamens 2, (as in all the following sections). Germen elongated, smooth, more or less stalked.

SALIX DECIPIENS. *White Welsh Willow. Varnished Willow.* TAB. **1339.**

Branches smooth, highly polished. Leaves lanceolate, pointed, serrated, very smooth; their petioles somewhat glandular. Floral leaves partly obovate and recurved. Germen tapering, stalked, smooth. Style longer than the cloven stigmas.

Salix decipiens, *E. B.* 1937. *Smith* IV. 183. *Lindley* 232. *Hooker ed.* 2. 414. *ed.* 3. 421. *ed.* 4. 358. *Macreight* 211.

Met with in moist hedges and low, watery meadows, and cultivated in Osier-grounds, in several parts of England. Left to itself it forms a tree of middling size, from 15 to 20 feet in height. It is readily known by the very smooth, glossy bark of its last year's shoots, which is of a light-reddish-brown, appearing as if it were varnished. The young twigs are often stained with crimson.

Cultivated as an Osier, it is described as producing, for a time, good rods for basket-making, but these gradually diminish in length, so as in the course of a few years not to be worth the cutting.

SALIX FRAGILIS. *Crack Willow.* TAB. **1340.**

Leaves ovato-lanceolate, acute, serrated, very smooth; their petioles glandular at the top. Catkins pubescent, the scales ciliated. Germen nearly sessile, oblongo-ovate, smooth. Style scarcely as long as the bifid stigmas.

Salix fragilis, *E. B.* 1807. *Smith* IV. 184. *Lindley* 232. *Hooker ed.* 2. 414. *ed.* 3. 421. *ed.* 4. 358. *Macreight* 211. Not of Woodville and other medical writers.

Common in low, marshy grounds and about the banks of rivers. It forms a "tall, bushy-headed tree, whose branches are set on obliquely, somewhat crossing each other, not continued in a straight line, by which it may readily be distinguished in the winter." Leaves dark-green, shining, more or less rounded toward the base; their serratures uniform, a little incurved, glandular, not viscid. Stipules semicordate, toothed. Germen about as long as the scale of the catkin. Stigmas cloven to the base, narrow, longer than the style. Flowers in April and May.

The young branches readily separate from the trunk in spring with the slightest blow or jerk, their bases being as brittle as glass; hence the name of this species.

SALIX Russelliana. *Bedford Willow.* Tab. **1341.**

Leaves lanceolate, tapering to each extremity, strongly and unequally serrated, smooth; their petioles glandular or leafy. Scales of the catkins narrow-lanceolate, slightly pubescent and ciliated. Germen stalked, lanceolate, acuminate, smooth. Style as long as the bifid stigma.

Salix Russelliana, *E. B.* 1808. *Smith* IV. 186. *Lindley* 232. *Hooker ed.* 2. 415. *ed.* 3. 422. *ed.* 4. 358. *Macreight* 211.

Frequent in marshy woods, Osier-grounds, and other watery places, especially in the midland and southern counties, where it was long overlooked, being confounded with *S. fragilis.* It seems to have been first recognized as a distinct species by the late Duke of Bedford, and, according to details in the *Salictum Woburnense, &c.*, is one of the most valuable species of the genus; at the same time it is of rapid growth and capable of attaining a comparatively enormous size, specimens having been noted measuring from 50 to 60 feet in height and from 10 to 13 feet in circumference. The hue of *S. Russelliana* is lighter than that of *S. fragilis.* The under surface of the leaves especially is very pale; their texture is firmer, their outline narrower, tapering at the base, not rounded, or ovate; their serratures are coarse and irregular, and their midrib much stouter. The glands of the footstalks often dilate into leaflets. The germen is longer than its scale, and more tapering than in the last species, with a longer stalk and style. Flowers in April and May.

The wood is valuable for poles and fences. The bark is said to contain more tannin than that of the Oak, and is especially prized in medicine on account of the large proportion of Salicine which it yields.

5. ALBÆ.

Trees, often of considerable size. They have lanceolate, glandularly-serrated leaves, more or less clothed beneath with long, silky hairs, that give the whole mass of foliage a light or whitish hue. Catkins lax. Germen smooth.

SALIX alba. *Common White Willow.* Tab. **1342.**

Leaves elliptico-lanceolate, acute, serrated, silky on both sides; the lower serratures glandular. Scales of the catkins short, rounded, pubescent. Germen nearly sessile, smooth. Stigmas nearly sessile, short, recurved, bifid.

Salix alba, *E. B.* 2430. *Smith* IV. 321. *Lindley* 238. *Hooker ed.* 2. 415. *ed.* 3. 422. *ed.* 4. 359. *Macreight* 211.

One of the most frequent of our native Willows, growing in moist woods and on the banks of rivers, ponds, and ditches, where it often forms a tree of large size. The old bark cracks into deep fissures. Branches wide spreading, somewhat drooping. Foliage of a silvery-grey hue, owing to the close-pressed silky hairs with which the leaves are more or less covered, especially on the under side. Barren catkins yellow, fertile ones green. Filaments hairy toward the base. Flowers in May.

β. CÆRULEA. *Blue Willow.* TAB. **1342***.

Is chiefly charactered by the leaves being less silky, often quite smooth. It is said to be of much quicker growth than the true *S. alba*: a cutting, planted by Mr. Browne at Hetherset, Norfolk, became in 10 years a tree 35 feet high and 5 feet 2 inches in girth.

Both of these are equally valuable for their wood and bark with *S. Russelliana.*

SALIX VITELLINA. *Yellow Willow. Golden Osier.* TAB. **1343.**

Leaves lanceolate, acute, with glandular serratures, more or less silky beneath, often so above. Scales of the catkins lanceolate. Germen sessile, smooth, ovato-lanceolate. Stigmas nearly sessile, bifid.

Salix vitellina, *E. B.* 1389. *Smith* IV. 182. *Lindley* 231. *Hooker ed.* 2. 416. *ed.* 3. 423. *ed.* 4. 359. *Macreight* 211.

Met with in low meadows, moist copses, and Osier-grounds in many parts of the kingdom; in the latter it is cultivated and consequently dwarf, but, when uncut, it forms a tree of moderate height conspicuous from the bright golden hue of its pendent branches. The leaves are narrow, very much acuminated, and of a bright-yellowish-green. Scales of the catkins linear-lanceolate, very acute, and much longer than the germen. Flowers in May.

Although very different in appearance and in the features above described, it is by some considered a variety of *S. alba.*

6. GRISEÆ.

SALIX PETIOLARIS. *Dark long-leaved Willow.* TAB. **1344.**

Leaves lanceolate, serrated, smooth, glaucous beneath: when young clothed with short, silky hairs, especially on the under surface. Scales of the catkins hairy, shorter than the stalks of the ovato-lanceolate, silky germens. Stigmas divided, nearly sessile.

Salix petiolaris, *E. B.* 1147. *Smith* IV. 181. *Lindley* 231. *Hooker ed.* 2. 416. *ed.* 3. 423. *ed.* 4. 359. *Macreight* 211.

Found in Angus-shire, Scotland, according to Mr. G. Don. It was introduced to our Flora in the first edition of the present work on the authority of the late Mr. Dickson, but is not indigenous to the eastern continent. A small, spreading tree, with slender, smooth, dark-brown branches, and greyish-green leaves, rather unequal at the base and with longish petioles. Catkins lax; the fertile ones scarcely an inch long. Scales very short. Germens exserted, on very long pedicels. Flowers in April.

7. ROSMARINIFOLIÆ.

Small, erect shrubs, with linear-lanceolate leaves, which are either entire, or furnished with very minute, glandular teeth. Catkins short, lax. Germens stalked, silky.

SALIX ROSMARINIFOLIA. *Rosemary-leaved Willow.* TAB. **1345.**

Leaves entire, linear-lanceolate, straight, more or less silky. Catkins oblongo-ovate, recurved, lax. Scales short, hairy. Germen stalked, lanceolate, acuminate, silky. Style about as long as the linear, divided stigmas.

Salix rosmarinifolia, *E. B.* 1365. *Smith* IV. 214. *Lindley* 236. *Hooker ed.* 2. 416. *ed.* 3. 423. *ed.* 4. 360. *Macreight* 214.

Found in moist, sandy soil in several places in Great Britain. A shrub, about 3 feet high, erect, with slender branches. Leaves sometimes a little glandular on the edge; silky beneath, the upper surface nearly smooth. Stipules erect, lanceolate. Catkins nearly sessile, always recurved; their scales small, black, hairy. Stigmas blackish. Flowers in April.

SALIX ANGUSTIFOLIA. *Little Tree Willow.* TAB. **1346.**

Leaves linear-lanceolate, very obscurely toothed, nearly smooth, silky when young. Catkins ovate, erect. Scales very hairy, nearly as long as the young germens. Germen stalked, ovato-lanceolate, acuminate, densely silky. Style as long as the broad, erect, entire stigmas.

Salix Arbuscula, *E. B.* 1366. *Smith* IV. 198. *Lindley* 233. S. angustifolia, *Hooker ed.* 2. 417. *ed.* 3. 423. *ed.* 4. 360.

A native of the Scottish Highlands, where it forms a little tree-like bush, about 1 or 2 feet high, with spreading, downy branches. Leaves glaucous beneath, light-green and smooth, unless when young; variable in breadth. Catkins nearly sessile, always erect. Scales oblong, purplish, shaggy. Germen with a dense, but scarcely silky pubescence. Stigmas broadly ovate, erect, entire, tawny. Flowers in April.

8. FUSCÆ.

Small shrubs, generally with procumbent stems. Leaves elliptical or lanceolate, nearly entire, and generally silky beneath. Catkins ovate or cylindrical. Germens stalked, silky.

SALIX DONIANA. *Don's Willow.* TAB. **1346*.**

Branches erect. Leaves partly opposite, obovato-lanceolate, acute, slightly serrated, even; livid and somewhat silky beneath. Stipules linear. Catkins erect, cylindrical. Germen stalked, silky, longer than the obovate scale.

Salix Doniana, *E. B. Supp.* 2599. *Smith* IV. 213. *Lindley* 235. *Hooker ed.* 2. 417. *ed.* 3. 424. *ed.* 4. 361. *Macreight* 212.

Sent from Scotland by the late Mr. Don. A shrub about 6 feet high, branched from the base. Buds red, slightly downy. Leaves glaucous beneath, the edges a little recurved. Catkins on short stalks, about an inch in length. Scales obovate, blackish, bearded. Germen ovato-oblong, grey with silky hairs, about half as long again as the scale. Style very short. Stigmas small, notched, pale. Flowers early in May.

Somewhat resembling *S. purpurea* in the first section, *Monandræ*, and referred thither by some botanists, the barren plant being unknown.

SALIX FUSCA. *Dwarf Silky Willow.* TAB. **1347** to **1351**.

Stems more or less procumbent. Leaves elliptical, or approaching to lanceolate, acute, entire, or with minute glandular serratures, somewhat downy, glaucous and generally very silky beneath. Germen lanceolate, very silky; the pedicel very long. Stigmas bifid.

S. fusca, *Hooker ed.* 2. 417. *ed.* 3. 424. *ed.* 4. 361. S. repens, *Macreight* 214.

The varieties of this species are numerous, differing chiefly in habit and foliage.

α. Stem much branched, upright, decumbent below. Leaves elliptico-lanceolate. S. fusca, *E. B.* 1960. *Smith* IV. 210. *Lindley* 235. TAB. **1347**.

β. Stem depressed, with short upright branches. Leaves elliptico-lanceolate. S. repens, *E. B.* 183. *Smith* IV. 200. *Lindley* 235. TAB. **1348**.

γ. Stem prostrate, with straight elongated branches. Leaves elliptico-oblong. S. prostrata, *E. B.* 1959. *Lindley* 235. Not of Smith's English Flora. TAB. **1349**.

δ. Stem recumbent. Leaves elliptical. S. ascendens, *E. B.* 1962. S. fœtida, *Smith* IV. 208. *Lindley* 235. TAB. **1350**. S. parvifolia, *E. B.* 1961. is the same var. with smaller leaves. TAB. **1350***.

ε. Stem procumbent. Leaves elliptico-lanceolate. S. incubacea, *E. B. Supp.* 2600. *Smith* IV. 212. *Lindley* 235. Linnæus. TAB. **1350****.

ζ. Stem erect or spreading. Leaves elliptical, with a recurved point, very silvery beneath. S. argentea, *E. B.* 1364. *Smith* IV. 207. *Lindley* 234. TAB. **1351**.

Small and generally procumbent shrubs, common on sandy heaths and moors. They vary as above, according to situation and exposure, but are too closely allied by more important features to be admitted as distinct species. *S. argentea* is met with on the loose, shifting sands of our flat sea-coasts, and, compared with either *S. fusca* or *S. repens*, appears at first sight to differ widely, but the intermediate varieties reconcile all apparent anomalies in this as well as in other points of view. Flowers in April and May.

9. AMBIGUÆ.

SALIX AMBIGUA. *Ambiguous Willow.* TAB. **1351***.

Leaves oval, obovate, or lanceolate, slightly serrated upwards, with a recurved point; downy above, soft, silky, and with prominent veins beneath. Stipules semi-ovate. Catkins erect, cylindrical. Germens lanceolato-subulate, very silky, on long hairy pedicels. Style short or elongated. Stigmas short, obovate, entire or cloven.

Salix ambigua, *E. B. Supp.* 2733. *Hooker ed.* 2. 418. *ed.* 3. 425. *ed.* 4. 361. *Macreight* 214.

The following varieties have been noted, and are figured in our plate.

α. Leaves moderately hairy or silky. Stigmas sessile or subsessile. S. ambigua, *Ehrh.* S. proteifolia, *Schleich.*

β. Leaves obovate, very silky on both sides. Stigmas nearly sessile.

γ. Leaves oblong, moderately hairy or silky. Style elongated. S. spathulata, *Willdenow.*

δ. Leaves lanceolate, almost linear. Stipules stalked. Style much elongated.

Met with on gravelly heaths and moors in Sussex, Essex, and Suffolk; likewise in several places in Scotland. A small shrub 2 to 4 or 5 feet high, the branches sometimes procumbent. Leaves more or less hoary or silvery with silky hairs. Catkins half an inch to an inch in length; the fertile ones lengthening after flowering. Flowers in May.

10. RETICULATÆ.

SALIX RETICULATA. *Reticulated Willow.* TAB. **1352.**

Leaves orbicular, inclining to elliptical, entire, mostly glabrous, reticulated with veins, glaucous beneath. Germen sessile, oblongo-ovate, downy. Stigmas bifid, nearly sessile.

Salix reticulata, *E. B.* 1908. *Smith* IV. 200. *Lindley* 234. *Hooker ed.* 2. 419. *ed.* 3. 426. *ed.* 4. 362. *Macreight* 215.

A native of the loftier mountains of Scotland and the north of England. Stems reddish, very short, tufted, much branched, procumbent, forming, with their beautifully reticulated foliage, a sort of carpet or tapestry upon their native rocks. Leaves on long petioles, without stipules, rigid, coriaceous, dark-green and shining above, glaucous beneath; downy when young. Catkins cylindrical, reddish, on rather long terminal stalks. Flowers in June and July.

11. GLAUCÆ.

Small, erect shrubs; remarkable for their soft, hairy and silky oblong or lanceolate leaves, which are often white and cottony beneath. Germens sessile, very downy, or silky.

SALIX GLAUCA. *Glaucous Mountain Willow.* TAB. **1353.**

Leaves ovato-lanceolate, entire, downy; snow-white and cottony beneath. Germen sessile, ovate, very dowy. Stigmas nearly sessile, bifid.

Salix glauca, *E. B.* 1810. *Smith* IV. 201. *Lindley* 234. *Hooker ed.* 2. 419. *ed.* 3. 426. *ed.* 4. 362. *Macreight* 214.

Found in several places in the Highlands of Scotland. A shrub, 2 or 3 feet high; very much resembling the following, but distinguished by its narrower leaves, which are whiter and less prominently veined beneath; by the petioles being decurrent; and by the shorter germen, and obtuse, nearly sessile stigmas. Flowers in July.

SALIX ARENARIA. *Downy Mountain Willow.* TAB. **1354.**

Leaves oblongo-lanceolate, entire, downy, especially beneath, reticulated with veins. Style as long as the lanceolate, sessile, thickly downy germen. Stigmas linear.

Salix arenaria, *E. B.* 1809. *Smith* IV. 204. *Lindley* 234. *Hooker ed.* 2. 419. *ed.* 3. 426. *ed.* 4. 362. S. limosa, *Wahlenberg. Macreight* 214.

Met with on the mountains of Breadalbane, Clova, and others in the Highlands of Scotland, where it forms a stout, branched, bushy shrub, 2 or 3 feet high, with reddish-brown, glossy bark. Leaves reticulated with sunk veins, and clothed with a thin cottony down above; very white and woolly, with prominent veins beneath. Petioles broad at the base, not decurrent. Catkins ovate, inclining to cylindrical. Scales dark-brown or blackish, villous with long, silky hairs. Germen nearly sessile, bearing a very long, filiform, dark-coloured style. Stigmas linear, deeply cloven or often entire. Flowers in June.

SALIX STUARTIANA. *Small-leaved Shaggy Mountain Willow.* TAB. **1355.**

Leaves ovato-lanceolate, nearly entire, acute; shaggy above, densely silky beneath. Style as long as the almost sessile, woolly germen. Stigmas capillary, deeply divided.

Salix Stuartiana, *E. B.* 2586. *Smith* IV. 203. *Lindley* 234. *Hooker ed.* 2. 419. *ed.* 3. 427. *ed.* 4. 363. *Macreight* 214.

Found on the mountains of Breadalbane by the Rev. Dr. Stuart, and since by Mr. Borrer in the same district, near the upper end of the burn of Fionlarig. Except in the smaller, more pubescent, and wavy leaves, this can scacely be distinguished from *S. arenaria.* Flowers in July.

12. VIMINALES.

Trees, or large shrubs, with long pliant branches and lanceolate leaves. Germen nearly sessile, hairy or silky. Styles elongated. Stigmas linear, mostly entire.

SALIX VIMINALIS. *Common Osier.* TAB. **1356.**

Branches straight, slender. Leaves linear-lanceolate, elongated, pointed, obscurely crenated; white and silky beneath. Stipules very small, sublanceolate. Germen nearly sessile, narrow-lanceolate. Style elongated. Stigmas long, linear, mostly entire.

Salix viminalis, *E. B.* 1898. *Smith* IV. 228. *Lindley* 237. *Hooker ed.* 2. 420. *ed.* 3. 427. *ed.* 4. 363. *Macreight* 212.

Common in marshy places, and the most frequently cultivated of all the Osiers for the use of the basket-makers. Left to itself it will become a tree of considerable size. Leaves very long, narrow, almost linear, acute, revolute; smooth above, silky and shining beneath, with a strong midrib. Stipules sometimes wanting. Catkins

cylindrical, with brown, rounded, hairy scales. Style about as long as the germen. Flowers in April and May.

SALIX STIPULARIS. *Auricled Osier.* TAB. **1357.**

Leaves lanceolate, pointed, obscurely crenated; white and downy beneath. Stipules large, semicordate, acute. Germen on a short pedicel, lanceolate, very downy. Style scarcely the length of the long, linear, undivided stigmas.

Salix stipularis, *E. B.* 1214. *Smith* IV. 230. *Lindley* 238. *Hooker ed.* 2. 420. *ed.* 3. 427. *ed.* 4. 363. *Macreight* 212.

First noticed in Osier-grounds near Bury, Suffolk; likewise in woods and hedges in wet situations. A large shrub, somewhat resembling *S. viminalis,* but well distinguished by its broader, coarser leaves, and especially by the remarkably large stipules from which its name is derived. Leaves about 5 or 6 inches long, rounded at the base, unequally and slightly crenated. Stipules on short stalks, often with a small lobe or tooth at the base. Catkins large and thick, with obovate, brown, very hairy scales. Stigmas very long, recurved. Flowers in March. As an Osier it is of little value.

SALIX SMITHIANA. *Silky-leaved Osier.* TAB. **1358.**

Leaves lanceolate, acuminate, obscurely crenated; whitish and silky beneath. Stipules minute, crescent-shaped. Germen lanceolate, very silky, stalked. Style shorter than the long, linear, deeply-divided stigmas.

Salix mollissima, *E. B.* 1509. Salix Smithiana, *Willdenow. Smith* IV. 229. *Lindley* 237. *Hooker ed.* 2. 420. *ed.* 3. 427. *ed.* 4. 363. *Macreight* 212.

Met with in wet meadows and Osier-grounds near Bury, and elsewhere in Suffolk, and in several other parts of the kingdom. A large shrub, with erect, reddish branches. Leaves rounded at the base, thin and pliable; green and smooth above, white with a satiny pubescence beneath. Stipules small, very narrow, curved, toothed. Scales of the catkins obovate, brown, very hairy. Germen lanceolate, rather swollen and rounded towards the base. In the British Flora, the stigmas are described as mostly entire, but this never occurs in the Suffolk plant; though the long, filiform segments occasionally adhere, they will be found to separate with the slightest touch. Flowers in April and May.

SALIX FERRUGINEA. *Ferruginous Willow.* TAB. **1358*.**

Leaves thin, lanceolate, with wavy crenatures and small teeth; minutely hairy on both sides; paler beneath. Stipules small, semiovate. Scales oblongo-lanceolate. Germen lanceolate, silky, stalked. Style about as long as the oblong stigmas.

Salix ferruginea, *E. B. Supp.* 2665. *Hooker ed.* 2. 421. *ed.* 3. 427. *ed.* 4. 364. *Macreight* 212.

Met with in various parts of the kingdom, growing in marshy places and on the banks of rivers, where it forms a bushy shrub, with

rather spreading branches, and attaining a height of 12 or 14 feet. Leaves pale-green, greyish and often rusty beneath. Catkins about an inch long, cylindrical: scales silky, dark-brown, more or less acute. Germen stalked, densely silky, about twice as long as the scale. Stigmas oval or oblong, pale, mostly entire. Flowers in April.

"The newly-expanded leaves of the male plant are tinged with a brownish-purple, and their sides in that stage of growth closely rolled back, as is usual in the group to which this species belongs." *Borrer.*

SALIX ACUMINATA. *Long-leaved Willow.* TAB. **1359.**

Leaves lanceolato-oblong, pointed, wavy, finely toothed; glaucous and downy beneath. Stipules semiovate, then kidney-shaped. Catkins cylindrical. Germen ovate, hairy, stalked. Style as long as the obtuse, undivided stigmas.

Salix acuminata, *E. B.* 1434. *Smith* IV. 227. *Lindley* 237. *Hooker ed.* 2. 421. *ed.* 3. 428. *ed.* 4. 364. *Macreight* 212.

Frequent in woods and hedges in a moist soil, becoming a tree of moderate size, with rather broad, lanceolate leaves, usually dilated above the middle, and then more or less suddenly tapering to a point; their veins often reddish. Scales of the catkins oval-lanceolate, hairy, purplish. Germen on a long pedicel, broadly lanceolate rather than ovate. Stigmas oblong, thick, about as long as the style. Flowers in April.

13. CINEREÆ. *Sallows.*

Trees, sometimes of considerable size, or low shrubs. They have downy branches, and mostly obovate, grey, hoary, toothed, more or less wrinkled, stipulate leaves, very veiny beneath. Germens silky or cottony.

SALIX CINEREA. *Grey Sallow.* TAB. **1360.**

Leaves obovato-lanceolate; more or less glaucous above, downy, and reticulated with veins beneath. Stipules semicordate, serrated. Germens narrow-lanceolate, silky, stalked. Styles short. Stigmas mostly entire.

Salix cinerea, *E. B.* 1897. *Smith* IV. 215. *Lindley* 236. *Hooker ed.* 2. 421. *ed.* 3. 428. *ed.* 4. 364. *Macreight* 212.

Common in moist woods and on the banks of rivers. It forms a crooked and unsightly tree, rising to the height of 20 or 30 feet. Lower leaves entire, the upper serrated; the margins slightly recurved as expressed in our figure. Flowers in April.

This and the two following are very doubtfully distinguished, and ought probably to be regarded as mere varieties of one species; but the genus *Salix*, like *Rosa* and *Rubus*, is so prone to the production of hybrids, as to baffle the endeavours of the most intelligent and acute botanists to determine the limits of their alliances.

SALIX AQUATICA. *Water Sallow.* TAB. **1361.**

Stem and branches erect. Leaves obovato-elliptical, slightly serrated, flat, minutely downy; rather glaucous beneath. Stipules rounded, toothed. Germens lanceolate, silky, stalked. Stigmas nearly sessile.

Salix aquatica, *E. B.* 1437. *Smith* IV. 218. *Lindley* 236. *Hooker ed.* 2. 422. *ed.* 3. 428. *ed.* 4. 365. *Macreight* 212.

Common in swampy soil, overhanging ponds and ditches, or in wet woods, either in the form of a shrub or small tree. The leaves vary in proportions, but are generally broader than those of *S. cinerea*, and more or less obovate, thinner and more pliable. Flowers in April.

SALIX OLEIFOLIA. *Olive-leaved Sallow.* TAB. **1362.**

Stem erect; branches straight, spreading. Leaves obovato-lanceolate, flat, rather rigid, minutely toothed, acute; glaucous, hairy, and reticulated beneath. Stipules small, notched, rounded. Catkins oval, nearly half as broad as long.

Salix oleifolia, *E. B.* 1402. *Smith* IV. 219. *Lindley* 236. *Hooker ed.* 2. 422. *ed.* 3. 429. *ed.* 4. 365. *Macreight* 212.

Not unfrequent, especially in the east and south of England. A large shrub, with straight, slender, divaricating branches. Leaves green and finely hairy above; glaucous, with numerous, prominent, hairy, reticulated veins beneath, which have generally a rusty hue. Catkins short and thick; the scales brown, hairy, obovate. Flowers in March.

SALIX AURITA. *Round-eared, or Trailing Sallow.* TAB. **1363.**

Branches spreading. Leaves obovate, somewhat serrated, wrinkled with veins, more or less pubescent, very downy beneath; recurved at the margins, and tipped with a small, hooked point. Stipules roundish, semicordate. Germen lanceolate, silky, stalked. Style not so long as the short, ovate stigmas.

Salix aurita, *E. B.* 1487. *Smith* IV. 216. *Lindley* 236. *Hooker ed.* 2. 422. *ed.* 3. 429. *ed.* 4. 365. *Macreight* 212.

Common in moist woods and thickets. A large, spreading shrub, or, rarely, a small tree. Leaves varying in proportions in different soils, but readily recognised by their more or less convex, rugged, and almost wrinkled surface, ending in a small curved point. The stipules are usually large, rugged like the leaves and toothed. Flowers in May.

SALIX CAPRÆA. *Great Round-leaved Sallow.* TAB. **1364.**

Stem erect. Leaves roundish-ovate, pointed, serrated and waved at the margins; downy beneath. Stipules semicordate. Germen ovato-lanceolate, silky, stalked. Stigmas nearly sessile, undivided.

Salix capræa, *E. B.* 1488. *Smith* IV. 225. *Lindley* 237. *Hooker ed.* 2. 422. *ed.* 3. 429. *ed.* 4. 365. *Macreight* 212.

Common in hedges and thickets, but preferring a dry soil. A

tree of moderate size, readily known by its large, broad, roundish leaves, clothed on the under surface with a dense, white, cottony pubescence. Catkins from an inch to an inch and a half long, thicker and blunter than those of any other British species, *S. oleifolia* excepted. Scales brown, hairy. Germen on a long stalk, swelling at the base. Flowers in April and May. The copious yellow catkins of the male plant are very ornamental.

It is one of the most useful of its genus, its wood being manufactured into various agricultural implements, and the branches into hurdles. The bark is employed by the Highlanders and other northern people for tanning, and has long been in repute for its medicinal virtues.

SALIX SPHACELATA. *Withered-point Sallow.* TAB. **1365.**

Stem erect. Leaves somewhat elliptical or obovate, even, veiny, entire or slightly serrated; downy on both sides, discoloured at the point. Stipules semicordate, toothed, erect. Germens stalked, ovato-lanceolate, silky. Stigmas notched, longer than the style.

Salix sphacelata, *E. B.* 2333. *Smith* IV. 224. *Lindley* 237. *Hooker ed.* 2. 422. *ed.* 3. 429. *ed.* 4. 365. *Macreight* 212.

Found at Fionlarig, near the head of Loch Tay, Scotland. A large shrub rather than a tree, regarded by most botanists as an alpine variety of *S. capræa.* It has smaller, entire or but slightly-serrated leaves, and more slender catkins. Flowers in April and May.

14. NIGRICANTES..

Shrubs with long branches, or small trees. Many of the species approach the last division; their leaves being more or less ovate or obovate, but they are less wrinkled, and generally turn black in drying. Germens stalked, smooth, or silky. Style more or less bifid. Most of the species are very doubtfully distinguished.

SALIX COTINIFOLIA. *Sumach-leaved Sallow.* TAB. **1366.**

Stem erect; branches spreading, downy. Leaves broadly elliptical, nearly orbicular, obsoletely toothed; glaucous, downy and veiny beneath. Germen lanceolate, stalked. Style bifid. Stigmas notched.

Salix cotinifolia, *E. B.* 1403. *Smith* IV. 220. *Lindley* 236. *Hooker ed.* 2. 423. *ed.* 3. 430. *ed.* 4. 366. *Macreight* 213.

Met with in Norfolk and 2 or 3 places in Scotland. A shrub from 2 to 6 feet high. Its leaves nearly resemble in form and venation those of the Venice Sumach, *Rhus Cotinus*; hence the name. They are of a thick, firm texture, of a dull-green above, with a few scattered hairs, and pale, glaucous and downy beneath; the principal veins parallel, and spreading nearly at right angles from the midrib. Flowers in April and May.

SALIX HIRTA. *Hairy-branched Willow.* TAB. **1367.**

Stem erect; branches densely hairy. Leaves broadly elliptical, somewhat heart-shaped, pointed, finely crenate, downy on both sides. Stipules semicordate, flat, toothed, nearly smooth.

Salix hirta, *E. B.* 1404. *Smith* IV. 221. *Lindley* 236. *Hooker ed.* 2. 423. *ed.* 3. 430. *ed.* 4. 366. *Macreight* 213.

Found in Norfolk, and at Castle Eden, Yorkshire. A small tree with thick and remarkably hairy branches. Leaves 2 inches long, dull-green above, pale and glaucous beneath, finely veined and clothed on both sides with a fine down-like pubescence. "Style bifid, bearing capitate, emarginate stigmas." Flowers in April and May.

Very near the preceding, and differing chiefly in the foliage.

SALIX NIGRICANS. *Dark Broad-leaved Willow.* TAB. **1368.**

Leaves elliptico-lanceolate, acute, crenate; smooth, with a downy rib above, glaucous beneath. Germen lanceolate, downy, on a short downy stalk.

Salix nigricans, *E. B.* 1213. *Smith* IV. 172. *Lindley* 230. *Hooker ed.* 2. 423. *ed.* 3. 430. *ed.* 4. 366. *Macreight* 213. S. phylicifolia *β*, *Linn.*

First noticed as a British species in Wrongay fen, Norfolk, and found in marshes, Osier-holts, woods and thickets, in several parts of England. A large shrub, sometimes reaching the height of 10 or 12 feet. Leaves 3 inches long, dark-green above. Stipules yellowish-green, obliquely cordate, smooth. Catkins about an inch in length, thickish, obtuse, with obovate, brown hairy scales. Flowers in April.

The barren plant only seems to have been observed in Britain.

SALIX ANDERSONIANA. *Green Mountain Sallow.* TAB. **1369.**

Branches minutely downy. Leaves elliptical, acute, finely notched, slightly downy; paler or glaucous beneath. Stipules semiovate, nearly smooth. Germen narrow-lanceolate, smooth; its stalk as long as the silky-fringed scale. Style bifid at the extremity. Stigmas cloven.

Salix Andersoniana, *E. B.* 2343. *Smith* IV. 223. *Lindley* 237. *Hooker ed.* 2. 423. *ed.* 3. 430. *ed.* 4. 366. *Macreight* 213.

Found in woods, and on the sides of streams in several parts of Scotland, especially among the Breadalbane mountains, and upon the banks of the Tyne below Newcastle. A large shrub, with downy branches, which are green the first year, but afterwards of a dark-brownish hue. Leaves downy on both sides; pubescence minute. Fertile catkins short, ovate; with blackish scales fringed with long silky hairs. Flowers in May and June.

SALIX DAMASCENA. *Damson-leaved Willow.* TAB. **1369*.**

Young shoots densely hairy. Leaves ovate or rhomboidal, bluntly toothed; silky when young; at length nearly naked, green on

both sides. Stipules semicordate. Catkins (in flower) longer than the floral leaves; scales obovate. Germen stalked, naked. Style divided, longer than the diverging stigmas.

Salix damascena, *E. B. Supp.* 2709. *Hooker ed.* 3. 431. *ed.* 4. 367. *Macreight* 213.

First observed by the late Mr. Anderson growing in the south of Scotland and the Borders. An upright shrub attaining the height of 10 or 12 feet. "Perhaps too nearly allied to *S. Andersoniana* to be properly regarded as a species." *Borrer.*—Flowers in April.

SALIX Forsteriana. *Glaucous Mountain Sallow.* Tab. **1370.**

Stem erect; branches minutely downy. Leaves elliptic-obovate, acute, notched, slightly downy; glaucous beneath. Stipules vaulted. Catkins elongated. Germen narrow-lanceolate, silky, stalked. Style as long as the blunt, notched stigmas.

Salix Forsteriana, *E. B.* 2344. *Smith* IV. 224. *Lindley* 237. *Hooker ed.* 2. 424. *ed.* 3. 431. *ed.* 4. 367. *Macreight* 213.

Found in the same districts with *S. damascena,* and far from unfrequent in Scotland. A large shrub, nearly allied to the two preceding, especially the last, from which it is chiefly distinguishable by its leaves being glaucous beneath, its catkins more elongated, and silky germen. Flowers in May and June.

SALIX rupestris. *Silky Rock Willow.* Tab. **1371.**

Stem trailing; branches minutely downy. Leaves obovate, acute, serrated, flat, even; silky on both sides. Stipules hairy. Germen awl-shaped, silky, stalked. Style as long as the blunt undivided stigmas.

Salix rupestris, *E. B.* 2342. *Smith* IV. 222. *Lindley* 237. *Hooker ed.* 2. 424. *ed.* 3. 431. *ed.* 4. 367. *Macreight* 213.

Found on the rocks of Craigalleach and Mael Ghyrdy, Scotland, and near Blanchland, Northumberland. A trailing shrub, with dark-coloured, downy branches. Leaves finely and regularly serrated. Stipules small, ovate, hairy. Barren catkins ovate; fertile ones elongated and cylindrical in fruit. Scales purplish, ciliated with long silky hairs. Germen somewhat ovate at first, becoming subulate in maturity. Flowers in May.

SALIX petræa. *Dark-green Rock Willow.* Tab **1371*.**

Erect. Young shoots densely hairy. Leaves oblong, serrated, keeled, twisted, reticulated with deeply sunken veins; beneath hairy, glaucous, at length pale green. Stipules large, semicordate, flattish, with a few glands. Germen stalked, naked, wrinkled towards the point. Style divided, longer than the cloven stigmas.

Salix petræa, *E. B. Supp.* 2725. *Hooker ed.* 2. 424. *ed.* 3. 431. *ed.* 4. 367. *Macreight* 213.

Grows wild on the mountains of Breadalbane, Scotland. A large shrub, with crooked, ash-coloured branches, and brown twigs. Leaves dark green and shining above; serrated throughout with blunt, gland-tipped teeth. Stipules large, serrated, glandular on the edges.

Germen tapering. Style divided one-third of its length, forming pedicels to the thickish, cloven stigmas. Flowers in May.

SALIX PROPINQUA. *Flat-leaved upright Mountain Willow.* TAB. **1371** **.

Erect. Young shoots minutely pubescent. Leaves elliptical, obscurely crenated, nearly flat, with slightly sunken veins, nearly naked on both sides; pale green beneath. Stipules small, vaulted, glandulose. Germen stalked, silky towards the point. Style longer than the notched stigmas.

Salix propinqua, *E. B. Supp.* 2729. *Hooker ed.* 3. 432. *ed.* 4. 368. *Macreight* 214.

Admitted into our Flora on the authority of Mr. Anderson. A shrub of moderate size. The small, vaulted stipules, covered with glands on the upper disk as well as edges, partially silky germen, and undivided style, distinguish it from *S. petræa.*

15. BICOLORES.

Bushy shrubs, with smooth, or nearly smooth, obovate or lanceolate leaves, dark green above, and very glaucous beneath. Germens very silky.

SALIX TENUIOR. *Narrow-leaved intermediate Willow.* TAB. **1371** ***.

Leaves on slender petioles, obovato-lanceolate, acute, obsoletely crenate, flat, naked on both sides; glaucous beneath. Stipules small, acute, glandulose. Catkins slender, lax. Scales acute, longer than the silky stalk of the capsule. Style longer than the ovate stigmas.

Salix tenuior, *E. B. Supp.* 2650. *Hooker ed.* 2. 425. *ed.* 3. 432. *ed.* 4. 368. *Macreight* 214.

Found on the banks of the Lochy, near Killin, Breadalbane, Scotland. An upright shrub, with loosely-spreading branches and dark-green shining leaves. Nearly allied to the next species, *S. laurina,* but the branches are more lax, the petioles less dilated, and the catkins shorter and more slender. Flowers in May.

SALIX LAURINA. *Shining dark-green Willow.* TAB. **1372.**

Leaves elliptic-oblong, acute, waved and slightly serrated, nearly smooth; glaucous beneath. Petioles dilated at the base. Stipules pointed and serrated. Scales obtuse, hairy; about half as long as the densely-downy, ovate, long-stalked germens.

Salix bicolor, *E. B.* 1806. *Smith* IV. 178. *Lindley* 231. S. laurina, *Hooker ed.* 2. 425. *ed.* 3. 432. *ed.* 4. 368. *Macreight* 214.

This very distinct species of Willow grows in woods and thickets in several parts of the kingdom. It forms a small upright tree or shrub, readily recognised by its dark mahogany-coloured stems, and the upright position of its large laurel-shaped leaves, which are of

a dark, shining green above, and glaucous beneath. Style short. Stigmas roundish, notched. Flowers in April and May.

SALIX LAXIFLORA. *Loose-flowered Willow.* TAB. **1372***.

Erect. Young shoots slightly pubescent. Leaves naked, flat, broadly obovate, narrowed to the base, slightly toothed, glaucescent beneath; upper ones acute. Stipules small, concave. Catkins very lax. Germen stalked, bluntish, naked in the lower part. Style as long as the linear, divided stigmas.

Salix laxiflora, *E. B. Supp.* 2749. *Hooker ed.* 3. 432. *ed.* 4. 368. *Macreight.* 213.

Found at Killin, in Breadalbane, Scotland. A shrub or small tree, with crooked, divaricated branches, and shining, greenish-grey twigs. Leaves thin, bright green and shining above, more or less glaucous beneath. Flowers loosely set. Germen oblongo-lanceolate, contracted in the middle. Style half as long as the germen. Stigmas divided to the base; the segments linear, spreading. Flowers in April.

SALIX RADICANS. *Tea-leaved Willow.* TAB. **1373**.

Branches decumbent. Leaves obovate or elliptico-lanceolate, often with wavy serratures, smooth; glaucous beneath. Stipules somewhat lunate, glandular on the inside. Germen lanceolate, very silky, stalked. Style elongated, Stigmas entire or bifid.

Salix phylicifolia, *E. B.* 1958. *Smith* IV. 173. *Lindley* 230. *Macreight* 213. S. radicans, *Hooker ed.* 2. 425. *ed.* 3. 433. *ed.* 4. 368.

A native of the Breadalbane mountains of Scotland, where it forms a low shrub, with spreading, decumbent branches, which strike root when they reach the ground. Catkins cylindrical; their scales linear, nearly as long as the germen, silky at the back. Flowers in May.

SALIX BORRERIANA. *Borrerian Willow.* TAB. **1373***.

Branches erect. Leaves broadly lanceolate, with shallow, nearly even serratures, very smooth; glaucous beneath. Stipules lanceolate, small. Catkins lax; their scales acute, shaggy. "Germen lanceolato-subulate, on a long stalk, quite smooth. Style long, bifid. Stigmas linear, bifid."

Salix Borreriana, *E. B. Supp.* 2619. *Smith* IV. 174. *Lindley* 230. *Hooker ed.* 2. 425. *ed.* 3. 433. *ed.* 4. 369. *Macreight* 213.

Discovered by Mr. Borrer in Scotland, where it inhabits the Highland valleys. A much-branched shrub, several feet in height, decumbent at the base only. Nearly allied to the preceding, but differing in its mode of growth and habit, its narrower and truly lanceolate leaves and smooth germen. Flowers about the beginning of April, earlier than the generality of Mountain Willows.

SALIX DAVALLIANA. *Davallian Willow.* TAB. **1373****.

Upright. Young shoots and leaf stalks pubescent. Leaves obovato-lanceolate, flattish, very acutely pointed, obscurely toothed or

serrated, naked on both sides; somewhat glaucous beneath. Stipules minute. Scales obovate, silky. Germen acute, stalked, silky. Style as long as the divided stigma.

Salix Davalliana, *E. B. Supp.* 2701. *Smith* IV. 175. *Lindley* 230. *Hooker ed.* 2. 425. *ed.* 3. 433. *ed.* 4. 369. *Macreight* 213.

Brought from Scotland by Mr. G. Anderson. A bushy shrub with ascending branches, a habit that distinguishes it from *S. radicans*. Stipules very minute, gland-like. Scales of the catkins scarcely half the length of the acute lanceolate germen. Flowers in May.

SALIX TETRAPLA. *Four-ranked Willow.* TAB. **1373*****.

Upright. Young shoots and leaf stalks pubescent. Leaves lanceolate, twisted, somewhat carinated, very acutely pointed, serrated, nearly naked on both sides, glaucous beneath. Stipules small, semicordate; scales lanceolate, silky. Germen stalked, bluntish; naked in the lower part. Style longer than the divided stigma.

Salix tetrapla, *E. B. Supp.* 2702. *Smith* IV. 177. *Lindley* 231. *Hooker ed.* 2. 429. *ed.* 3. 433. *ed.* 4. 369. *Macreight* 213.

Gathered in Breadalbane, Scotland, by Mr. Borrer. A taller shrub than the last, which rarely exceeds 4 feet in height, with rather longer and more spreading leaves, less glossy on the upper surface and whiter beneath. It differs more essentially in the flowers. Flowers in May.

SALIX WEIGELIANA. *Weigelian Willow.* TAB. **1373** *4.

Leaves elliptical, rhomboidal, or almost round, with a short point, obsoletely crenate, naked on both sides; glaucous beneath. Stipules small. Catkins on short stalks. Scales oblong, hairy, longer than the hairy stalk of the germen. Style longer than the stigmas.

Salix Weigeliana, *E. B. Supp.* 2656. *Hooker ed.* 2. 426. *ed.* 3. 434. *ed.* 4. 369. *Macreight* 214. S. Wulfenia, *Smith* IV. 176. *Lindley* 231.

Not uncommon in the mountainous parts of Great Britain. An upright shrub, attaining under cultivation the height of 8 or 10 feet. Leaves dark green and shining above, very glaucous beneath. Flowers in April and May.

Mr. Borrer remarks, "It is difficult to define satisfactorily the distinctions between this and *S. nitens*; yet the aspect of the two is unlike, from the dark hue of the whole bush in *S. nitens*, and there seems to be a real difference in the structure of the leaves."

SALIX TENUIFOLIA. *Thin-leaved Willow.* TAB. **1373***5.

Upright. Young shoots and leaf-stalks densely pubescent. Leaves elliptical, or oblong, flat, with a recurved point, crenate, reticulated with sunken veins, slightly hairy; glaucous beneath. Stipules semicordate. Catkins on a short stalk. Bracteas small. Scales oblong, shaggy. Germen naked, on a naked stalk. Style as long as the stigmas.

Salix tenuifolia, *E. B. Supp.* 2795. *Smith* IV. 179. *Hooker ed.* 2.

426. *ed.* 3. 434. *ed.* 4. 370. For S. tenuifolia, *E. B.* 2186, see S. bicolor, *Tab.* 1375.

Found above the bridge of Kirkby Lonsdale, Westmoreland. Equally entitled to rank as a species with many of the preceding and following; presenting only another of those slight differential shades of character, to define the limits of which in nature, seems almost as easy a task as to draw lines of separation between the colours of the rainbow. In the British Flora of Sir W. Hooker, it is remarked, on the authority of Mr. Borrer, that the present plant scarcely differs from *S. Weigeliana*, but in having the germen and its stalk perfectly glabrous. It is to be feared that the fastidious spirit of modern botany has attached more importance to such trivial features than they deserve, dependent as they doubtless are, in numerous instances, upon difference of soil or exposure.

SALIX NITENS. *Shining-leaved Willow.* TAB. **1373***6.

Leaves ovate or elliptical, acute, slightly serrated; nearly naked, with sunk veins above; naked and glaucous beneath. Stipules small. Catkins on short stalks. Bracteas small. Scales oblong, hairy, longer than the hairy stalk of the germen. Style longer than the stigmas.

Salix nitens, *E. B. Supp.* 2655. *Smith* IV. 175. *Hooker ed.* 2. 426. *ed.* 3. 434. *ed.* 4. 370. *Macreight* 214.

Found in some part of Scotland by the late Mr. G. Anderson, and likewise in Teesdale. An upright shrub, resembling *S. Borreriana* in the dark mahogany hue of its shining twigs, most remarkable in the barren plant, but taller and of stouter growth. Leaves dark green, shining, glaucous or even white on the under side. Germen densely silky, rounded at the base, contracted towards the middle, and attenuated upwards. Flowers in April.

Nearly allied to the following, as well as to *S. Weigeliana*.

SALIX CROWEANA. *Crowe's Willow.* TAB. **1374**.

Leaves elliptical, slightly serrated, quite smooth; glaucous beneath. Stamens with their filaments more or less united below.

Salix Croweana, *E. B.* 1146. *Smith* IV. 192. *Lindley* 233. *Hooker ed.* 2. 427. *ed.* 3. 434. *ed.* 4. 370. *Macreight* 214.

Met with in swampy meadows in Norfolk, and in the north of England. A large shrub, with short, brittle, yellow or purplish divaricated branches. Leaves bright green and shining above, glaucous and veiny beneath; their points recurved. Mr. Borrer considers the connate filaments to be an accidental monstrosity, and consequently this may be only a variety of one of the preceding, which resembles it in habit. Flowers in May.

SALIX BICOLOR. *Two-coloured Willow.* TAB. **1375**.

Leaves elliptical, green and shining above, smooth and glaucous beneath, obliquely serrated. Stipules crescent-shaped, serrated. Filaments slightly bearded at the base.

Salix tenuifolia, *E. B.* 2186. *Lindley* 231. Salix bicolor, *Ehrhart. Hooker ed.* 2. 427. *ed.* 3. 435. *ed.* 4. 370. S. livida, *Macreight* 213.

A native of the Highlands of Scotland. A handsome species, with large smooth leaves, bright green on the upper side, and very glaucous beneath. The bright yellow catkins of the male plant are profusely developed in April, and like several other Willows, it often flowers a second time in July. The fertile plant seems not to have been observed, or has been confounded with some other species.

SALIX PHILLYREIFOLIA. *Phillyrea-leaved Willow.* TAB. **1375*.**

Young shoots pubescent. Leaves elliptico-lanceolate, acute at each end, strongly serrated, naked on both sides; glaucous beneath. Stipules small. Scales oblong, hairy, longer than the naked stalk of the smooth germen. Style as long as the stigma.

Salix phillyreifolia, *E. B. Supp.* 2660. *Hooker ed.* 2. 427. *ed.* 3. 435. *ed.* 4. 371. *Macreight* 213.

Gathered in the Highland valleys of Inverness-shire and Perthshire, Scotland. An upright shrub, with straight, yellowish-green twigs, and resembling somewhat in its foliage *Phillyrea latifolia.* The strongly serrated leaves, less glaucous on the under side, and habit, will prevent this being confounded with *S. bicolor*; while the smooth germen separates it from *S. Dicksoniana.* Flowers in April and May.

SALIX DICKSONIANA. *Broad-leaved Mountain Willow.* TAB. **1376.**

Young branches very smooth. Leaves elliptical, acute, slightly toothed, smooth; glaucous beneath. Catkins ovate, short erect. Germen stalked, ovate, silky. Stigmas nearly sessile.

Salix Dicksoniana, *E. B.* 1390. *Smith* IV. 196. *Lindley* 233. *Hooker ed.* 2. 427. *ed.* 3. 435. *ed.* 4. 371. *Macreight* 213.

A small upright shrub, discovered by the late Mr. Dickson on the Scottish Highlands. Branches, leaves and petioles quite smooth. Stipules minute. Fertile catkins ovate, very short. Scales dark purplish-brown, concave, notched, hairy. Stigmas on a short style, thick, emarginate, yellow. Flowers in April. Some doubt may be entertained of the identity of this species.

16. VACCINIIFOLIÆ.

Small shrubs, generally somewhat procumbent; their leaves opaque, glaucous beneath, resembling more or less those of a *Vaccinium.* Germens downy, sessile. The species are very nearly allied; so much so, that, like *S. fusca* and its allies, they may be regarded as mere varieties.

SALIX VACCINIIFOLIA. *Bilberry-leaved Willow.* TAB. **1377.**

Stems decumbent. Leaves ovato-lanceolate, serrated, smooth and even above; glaucous and silky beneath. Germens ovate, silky.

Salix vacciniifolia, *E. B.* 2341. *Smith* IV. 194. *Lindley* 233. *Hooker ed.* 2. 428. *ed.* 3. 436. *ed.* 4. 371. *Macreight* 215. S. livida, *Hooker Scot. Smith* IV. 199.

Not unfrequent on the Highland mountains. A low and partly procumbent shrub, distinguished from *S. prunifolia* by its habit, smaller size, slender branches and narrower leaves. Flowers in England, under cultivation, in April; on its native mountains, in June: the same difference is observable in the three following species or varieties of this group.

SALIX CARINATA. *Folded-leaved Willow.* TAB. **1378.**

Leaves ovate, finely serrated, smooth, slightly glaucous beneath: often folded so as to form a keel. Germen sessile, oblongo-ovate, very silky. Style short. Stigmas notched.

Salix carinata, *E. B.* 1363. *Smith* IV. 197. *Lindley* 233. *Hooker ed.* 2. 428. *ed.* 3. 436. *ed.* 4. 372. *Macreight* 215.

A larger and more erect shrub than the others of its group, with elongated, straight and nearly smooth branches. Leaves remarkably recurved and folded, so that the two sides approach each other, and cannot easily be pressed flat. Catkins small, ovate, with short, roundish, hairy scales. Germen twice as long as the scale. Stigmas nearly sessile, ovate, thick, at length notched. Found in the same districts with the preceding, but less frequent, and flowers about the same times.

SALIX PRUNIFOLIA. *Plum-leaved Willow.* TAB. **1379.**

Stem more or less erect. Leaves broadly ovate, serrated, smooth; glaucous beneath. Germen sessile, oblongo-ovate, very silky. Style short. Stigmas notched.

Salix prunifolia, *E. B.* 1361. *Smith* IV. 193. *Lindley* 233. *Hooker ed.* 2. 428. *ed.* 3. 436. *ed.* 4. 372. *Macreight* 214. S. myrsinites, *Lightfoot, not of Linn.*

Frequent on the Highland mountains of Scotland, growing to the height of 2 or 3 feet, with spreading and more or less decumbent branches. Leaves smooth, shining, the veins not prominent on the upper side; glaucous, veiny, and often silky beneath. Stigmas roundish. Flowers in June, or, in gardens, in April.

SALIX VENULOSA. *Veiny-leaved Willow.* TAB. **1380.**

Stem more or less erect, much branched. Leaves ovate, serrated, naked; reticulated with prominent veins above, rather glaucous beneath. Germens elliptical, silky.

Salix venulosa, *E. B.* 1362. *Smith* IV. 195. *Lindley* 233. *Hooker ed.* 2. 428. *ed.* 3. 436. *ed.* 4. 372. *Macreight* 214.

In size and general habit this closely accords with *S. prunifolia*, and is found in the same localities. The only difference of any importance consists in the prominence of the beautifully-reticulated veins on the upper surface; and according to the description of Sir W. Hooker, who considers it only a variety, the leaves of the latter plant partake of this character, or are "more or less veiny." It

flowers, under the same circumstances, at similar seasons with the three preceding.

17. MYRSINITES.

Small, bushy plants; with glossy, rigid, small, oval or broadly elliptical, serrated leaves. Germens downy.

SALIX MYRSINITES. *Green Whortle-leaved Willow.* TAB. **1381.**

Leaves elliptical, waved, serrated, smooth, veiny, glossy on both sides. Catkins short, lax. Germen lanceolate, loosely silky, sessile. Style half as long as the germen, bifid as well as the linear stigmas.

Salix myrsinites, *E. B.* 1360. *Smith* IV. 195. *Lindley* 233. *Hooker ed.* 2. 429. *ed.* 3. 436. *ed.* 4. 372. *Macreight* 215. β. leaves smaller, narrower. S. arbutifolia, *Smith.*

A little, sturdy, erect shrub, 1 to 2 feet high, with numerous short, thick, divaricated branches. Leaves broadly elliptical, slightly recurved, polished on both sides, dark green; a little silky when young: their withered skeletons often remain on the branches through the winter. Catkins small; their scales blackish, hairy. A native of the Highland mountains, but of rare occurrence. Flowers in June, the plant being then in full leaf.

SALIX PROCUMBENS. *Oval rigid-leaved Alpine Willow.* TAB. **1381*.**

Branches diverging. Leaves oval, minutely serrated, recurved, bright green and shining on both sides. Catkins elongated, thick, cylindrical. Germen nearly sessile, tapering, obsoletely quadrangular, silky. Style very short, deeply cloven. Stigmas short, obtuse, spreading, bifid.

Salix procumbens, *E. B. Supp.* 2753. *Hooker ed.* 2. 429. *ed.* 3. 437. *ed.* 4. 373. *Macreight* 215. S. lævis, *Hooker ed.* 1. 432.

Found in several places on the Highland mountains of Scotland. A bushy shrub, with diverging, procumbent branches. It resembles *S. myrsinites* in appearance, but differs in being much larger in all its parts; in the leaves being more oval and less conspicuously serrated; and in its catkins being longer and cylindrical, instead of short and oval. Flowers in June. The leaves of *S. myrsinites* become almost black in drying, while those of the present species, as observed in the Brit. Flora, become of a yellowish-brown colour.

18. HERBACEÆ.

A minute shrub; remarkable for its small, few-flowered catkins.

SALIX HERBACEA. *Least Willow.* TAB. **1382.**

Leaves orbicular, serrated, reticulated with veins; very smooth and shining on both sides. Catkins few-flowered. Germen sessile, lanceolate, smooth. Style and stigmas bifid.

Salix herbacea, *E. B.* 1907. *Smith* IV. 200. *Lindley* 234. *Hooker ed.* 2. 430. *ed.* 3. 437. *ed.* 4. 373. *Macreight* 215.

Frequent, often abundant, on the highest mountains of Scotland, Wales, and Cumberland. It may rank as one of the smallest of shrubs, scarcely rising above an inch or two from the ground. Its small, and at first wiry stems and branches, however, occupy a considerable extent, creeping in every direction under the soil, and penetrating the fissures of rocks. Leaves rigid, nearly orbicular, sometimes emarginate at the tip. Catkins terminal, on short stalks, ovate, yellow. Flowers in June.

19. HASTATÆ.

Low shrubs; with very broad leaves, and exceedingly shaggy and silky catkins.

SALIX HASTATA. *Apple-leaved Willow.* TAB. **1383.**

Leaves broadly elliptical, waved, thin and crackling, very smooth; glaucous beneath. Stipules large, heart-shaped, about as long as the petioles. Scales shaggy with long, silky hairs. Germen on a short stalk, lanceolate, acuminate, smooth. Style elongated. Stigmas cloven.

Salix malifolia, *E. B.* 1617. *Smith* IV. 180. *Lindley* 231. S. hastata, *Linn. Hooker ed.* 2. 430. *ed.* 3. 438. *ed.* 4. 373. *Macreight* 213.

Found on the sands of Barrie, near Dundee, Scotland. A large, spreading shrub; with crooked, brittle branches, and large, broadly elliptical, pointed leaves, which are of a thin substance and harsh to the touch. Fertile catkins about an inch long, compact, very silky. Flowers in May.

SALIX LANATA. *Woolly, broad-leaved Willow.* TAB. **1383*.**

Leaves broadly oval, pointed, entire, shaggy, glaucous beneath. Catkins sessile, clothed with long, yellow, silky hairs. Germen nearly sessile, lanceolate, smooth; longer than the style. Stigmas undivided.

Salix lanata, *E. B. Supp.* 2624. *Smith* IV. 205. *Lindley* 234. *Hooker ed.* 2. 430. *ed.* 3. 438. *ed.* 4. 374. *Macreight* 214.

A rare inhabitant of the mountains of Scotland, as in Glen Callater, and at the head of the Glen of Dole, Clova, Angus-shire. A low shrub, with straggling, tortuous branches. Leaves 2 or 3 inches long, clothed more or less with a soft, shaggy hair, at first of a golden yellow colour, changing to white with age. "The catkins first appear in April from the extremities of the branches, bursting from two shining, chestnut-coloured scales, and are clothed with the most beautiful, long, yellow, soft and silky hairs that can be imagined; and then are accompanied by a few young leaves as soft, as silky, and as yellow as themselves."—*Hooker.*

"This is," observes Wahlenberg, "the most beautiful Willow in Sweden, if not in the whole world. The splendid golden catkins, at the ends of the young branches, light up as it were the whole bush,

and are accompanied by the young foliage, sparkling with gold and silver. It yields more honey than any other Salix, insomuch that the catkins are sweet to the mouth, and are much frequented by alpine bees. From the marginal glands of the stipules, and sometimes from those of the leaves, a gummy exudation proceeds, staining the paper in which the plant is dried like *S. pentandra*."

Order II. TRIANDRIA.

Genus CCCCLXXXV. EMPETRUM. *Crow-berry.*

Nat. Order. Empetraceæ.

Gen. Char. *Perianth* composed of several imbricated scales, of which the 3 inner are often regular and petaloid. —*Barren flower.* Stamens 3, with long filaments.—*Fertile flower.* Germen globose. Style short. Stigma dilated, peltate, with 6 to 9 rays. Berry superior, globose; 6- to 9-celled; cells 1-seeded.

Small evergreen, heath-like shrubs, with narrow, exstipulate leaves, and minute axillary flowers. Acrid; but the fruit is occasionally eaten.

EMPETRUM nigrum. *Black Crow-berry. Crake-berry.* Tab. **1384.**

Stems procumbent. Leaves linear-oblong.

Empetrum nigrum, *E. B.* 526. *Smith* IV. 234. *Lindley* 224. *Hooker ed.* 2. 431. *ed.* 3. 438. *ed.* 4. 375. *Macreight* 205.

Abundant on the mountainous heaths of the northern counties of England, Scotland, and Ireland. A small procumbent shrub, with slender, wiry, reddish-brown branches, which strike root as they extend. Leaves oblong, blunt, their margins so much recurved as to meet on the under side. Flowers axillary, towards the summit of the branches, red or purplish; the fertile ones solitary; the barren ones sometimes 2 or 3 together, their perianths, or more properly involucral scales, confounded, in which state they might be regarded as hex- or enneandrous. Berries black when ripe, the size of a small pea. Flowers in May. The fruit is ripe in August or September.

The fruit has a mawkish flavour, not much unlike that of the Elder, and, where abundant, yields a temporary supply of food to the grouse, ptarmigans, and other game birds. In the north of Europe and Asia, this plant overruns thousands of acres of rocky and moorish ground; and its berries, though little grateful to a southern palate, are eaten by our Highlanders, as well as by the Laplanders and Siberians: the latter people, according to Gmelin, make an acid drink from them, somewhat resembling lemonade; and in Kamtschatka they are eaten with fish, and made into puddings with lily-bulbs. Linnæus, how-

ever, informs us that they occasion head-ache if taken in large quantity. Boiled with alum they afford a dark purple dye.

Genus CCCCLXXXVI. RUSCUS. *Butcher's-broom.*

Nat. Order. Smilaceæ, *Brown.* Asparageæ, *DeCand.*

Gen. Char. *Perianth* 6-parted.—*Barren flower:* filaments combined at the base (monadelphous). *Anthers* 3 or 6.—*Fertile flower. Nectary* (combined abortive filaments) tubular. *Style* 1. *Stigma* 1. *Berry* superior, globose; 3-celled; cells 3-seeded.

Evergreen under-shrubs, or climbers; the former scattered over the middle and southern countries of Europe, the latter natives of southern Africa. Flowers small, greenish.

RUSCUS aculeatus. *Common Butcher's-broom.* Tab. **1385.**

Stems rigid, branched. Leaves ovato-acuminate, very rigid and pungent, bearing the solitary flower on their upper surface.

Ruscus aculeatus, *E. B.* 560. *Smith* IV. 235. *Lindley* 271. *Hooker ed.* 2. 431. *ed.* 3. 439. *ed.* 4. 375. *Macreight* 234.

Frequent in woods and thickets, especially on a gravelly soil, in the southern parts of England. Stems 1 to 2 feet high, round, striated, branched. Leaves hard, entire, striated; tipped with a sharp thorn. Flowers solitary, minute, greenish; springing from about the middle of the upper side of the leaves. Berry globular, scarlet, large; its pulp sweetish: it rarely perfects more than 1 or 2 seeds, the rest proving abortive. Flowers in March and April.

Order III. TETRANDRIA.

Genus CCCCLXXXVII. VISCUM. *Misseltoe.*

Nat. Order. Loranthaceæ.

Gen. Char. *Barren flower. Calyx* obsolete; *petals* 4, ovate, fleshy, slightly cohering by their dilated bases. *Anthers* sessile, one attached to the inner face of each petal, —*Fertile flower. Calyx* superior, an obscure margin. *Petals* 4, erect, ovate, very minute. *Stigma* sessile. *Berry* inferior, 1-seeded.

A remarkable genus of leafy, parasitical plants, which fix their roots beneath the bark of various trees, and subsist by absorption of their sap. Their leaves are opposite, of a more or less fleshy texture, entire and exstipulate. The Misseltoe itself is not a plant of much beauty, however the singularity

of its habit, and its association with the history of ancient superstition, may render it an object of interest with most persons: its flowers are small and inconspicuous. But many species of the genus *Loranthus*, and others belonging to the same natural group, which abound in the forests of warm climates, growing, like our Misseltoe, upon the trunks and branches of various trees, are among the most splendid of flowering plants.

VISCUM ALBUM. *Common Misseltoe.* TAB. **1386.**

Stems dichotomous. Leaves lanceolate, obtuse. Flowers in heads of about 5 each, sessile in the axils of the uppermost pairs of leaves.
Viscum album, *E. B.* 1470. *Smith* IV. 236. *Lindley* 133. *Hooker ed.* 2. 431. *ed.* 3. 439. *ed.* 4. 375. *Macreight* 109.

Very frequent in the southern parts of England, especially on apple-trees in the cider counties; found also occasionally on the Hawthorn, Lime, Maple, Service, Ash, Willow, Hazel, Elm and Oak; but rarely on the last tree. The Misseltoe may be regarded as an evergreen shrub. Its forked branches form large, smooth, pale-green tufts, which in winter assume a yellowish hue. The large white semi-transparent berries do not attain maturity until the second year; hence they are ordinarily seen to occupy the forks of the branches, though the clusters of small yellowish flowers are always produced at the extremities of the newly-formed shoots. The anthers are curiously punctate, as shown in our left-hand figure, which is an enlarged view of one adhering to the face of its petal. Flowers from March to May.

The circumstance of the Misseltoe vegetating upon a variety of trees which have no natural affinity to each other, would seem to indicate that it subsisted upon the sap, a fluid of nearly similar qualities in all vegetables; and not upon the elaborated or proper juice of the plant, as is doubtless the case with parasites whose leaves or respiratory organs are abortive or only rudimental. See *Orobanche*, vol. v. p. 69.

In the rare occurrence of the Misseltoe upon the Oak, probably originated the importance attached to a branch of the plant gathered from that tree in the sacred mysteries of the Druids. For the same reason the Misseltoe of the Oak was, ages afterwards, preferred to that from the Apple or Hawthorn in medicine, when it was in high repute as a remedy for epilepsy, a notion now nearly exploded. It is simply a slight astringent, and far inferior in its effects upon the constitution to the weakest now employed in physic. The berries are full of a sweetish and extremely viscid pulp, from which bird-lime is sometimes made. Rubbed when ripe upon the new bark of almost any tree, they will adhere, and sometimes vegetate; but the plant is said to be chiefly propagated by the Thrush and other birds which feed upon them, who void the seeds uninjured, and probably stimulated by the vital warmth of their intestines.

Genus CCCCLXXXVIII. HIPPOPHAE. *Sallow-thorn.*

Nat. Order. Eleagnaceæ.

Gen. Char. *Barren flowers* collected into a small catkin, each scale bearing a flower. *Calyx* of 2 roundish segments. *Anthers* linear, sessile.—*Fertile flowers* axillary, solitary. *Calyx* tubular, slightly bifid at the summit. *Germen* superior. *Style* short. *Stigma* subulate, exserted. *Nut* 1-seeded, surrounded by the large, coloured, fleshy, berry-like calyx.

Shrubs or small trees, natives of cool and temperate countries in the northern hemisphere. They have alternate, entire, exstipulate leaves, small axillary, apetalous flowers, and a succulent, berry-like, edible fruit. Whole plant, bark, leaves, and fruit more or less silvery or glaucous, from being clothed with minute umbilicated scales.

HIPPOPHAE rhamnoides. *Common Sallow-thorn. Sea Buck-thorn.* Tab. **1387**.

Branches ending in thorns. Leaves linear-lanceolate, scattered.

Hippophae rhamnoides, *E. B.* 425. *Smith* IV. 238. *Lindley* 208. *Hooker ed.* 2. 431. *ed.* 3. 439. *ed.* 4. 375. *Macreight* 202.

Met with, growing on sand-hills and cliffs, in several places along the eastern and south-eastern coasts of England. A small, hard-wooded tree, or shrub, with thorny branches. Leaves of a silvery white, especially beneath, resembling, as Sir J. E. Smith well expresses it, the back of a looking-glass. Berries bright orange-colour, somewhat elliptical, very juicy, acid, and astringent; containing in their centre an oblong, shining, black nut. Flowers in May. Fruit ripe in September.

Though much cultivated in gardens and shrubberies on account of its pretty foliage, it seldom or never produces fruit unless in its native soil. The whole plant abounds in a yellow colouring matter, employed in some countries as a dye. In France and Sweden the berries are made into an acid sauce for fish.

Genus CCCCLXXXIX. MYRICA. *Gale. Bog-Myrtle.*

Nat. Order. Myricaceæ.

Gen. Char. *Catkins* ovate, with concave scales.—*Barren flower. Stamens* 4 to 6; anthers 4-valved.—*Fertile flower. Germen* solitary. *Stigmas* 2. *Drupe* 1-celled, 1-seeded.

Shrubs or trees, with alternate, simple leaves, thickly beset with resinous glands and dots, and yielding a pleasant aromatic odour. The catkins of several species afford an abun-

dance of wax, which is collected in North America from those of *M. Cerifera* and *M. Caroliniensis*, and employed as a substitute for tallow in making candles. It is stated by Pursh to be equal to bees'-wax, and is obtained by the simple process of pouring boiling water upon the catkins, when the wax rises as a scum to the surface. All of the species are more or less astringent.

MYRICA Gale. *Sweet Gale. Dutch Myrtle.* Tab. **1388.**

Leaves lanceolate, broader upwards, serrated; tapering and entire towards the base. Scales of the catkins pointed.

Myrica Gale, *E. B.* 562. *Smith* IV. 239. *Lindley* 242. *Hooker ed.* 2. 432. *ed.* 3. 439. *ed.* 4. 379. *Macreight* 217.

This fragrant shrub grows abundantly in bogs and moory ground nearly throughout the kingdom, but especially in the north. Stems and branches sprinkled with white resinous glands, as well as the leaves. The flowering shoots are always developed from the terminal buds of the last year's branches, which thus, instead of lengthening, die at the extremity when the fructification is completed; the vegetation of the shrub being maintained by the production of new branches from the lateral buds: hence in a few years a very compact, thick bush is formed, which is a favourite resort of the Viper, *Coluber Berus*, when growing in the gravelly and rocky districts in which that reptile is generally found. Leaves nearly smooth, paler beneath. Flowers in May. The fruit is ripe in August or September; its surface is sprinkled with shining resinous particles, which easily rub off, and diffuse an odour something like the red cedar wood. Plants often monoecious. The leaves have a pleasant bitter flavour, and are said by Linnæus to be employed by the poor of northern Europe instead of hops in brewing. The catkins yield wax, but in too small quantity to be worth collecting.

Order IV. PENTANDRIA.

Genus CCCCXC. HUMULUS. *Hop.*

Nat. Order. Urticaceæ.

Gen. Char. *Barren flower. Calyx* 5-parted. *Anthers* with 2 pores at the apex.—*Fertile flowers* amentaceous. *Scales* of the catkin large, concave, entire, persistent; single-flowered. No calyx. *Germen* single. *Styles* 2. *Fruit* 1-seeded.

HUMULUS Lupulus. *Common Hop.* Tab. **1389.**

The only species known.

Humulus Lupulus, *E. B.* 427. *Smith* IV. 240. *Lindley* 219. *Hooker ed.* 2. 432. *ed.* 3. 440. *ed.* 4. 376. *Macreight* 206.

This beautiful climbing plant, so useful to the inhabitants of northern Europe in the preparation of their favourite beverage, is frequent throughout England in hedges and thickets, especially in strong moist soils, although considered by many not to be indigenous. The Hop seems to be distributed pretty generally over the temperate and cooler countries of Europe and America, but does not naturally extend into the high latitudes of either continent. The old distich,

"Turkeys, Carp, *Hops*, Pickerel and Beer,
Came into England all in one year,"

has been often quoted in proof of its not being a native of England; but, as observed in the previous edition of English Botany, though perhaps first used for making beer in the time of Henry VIII., and then, as has been the case with some other plants, imported from abroad, it might have been really wild at home. Stems angular, rough with prickles, twining from left to right. Leaves opposite, mostly 3- to 5-lobed, serrated, veiny, rough. Inflorescence of the barren plant in small, yellowish-green panicles; of the fertile one in axillary catkins. Flowers in July. Perennial.

The fragrant, bitter quality, for which the Hop is chiefly valued, resides in the catkins of the fertile plant: an active principle has been obtained from these called *Lupulin*, which, as well as the Hop itself, is sometimes used medicinally as a sedative. A pillow stuffed with the catkins is often employed to induce sleep when other remedies have failed; for this purpose the Hops should be previously heated to promote the disengagement of the volatile narcotic principle. The fibres of the stem possess the tenacity which distinguishes those of the Hemp, the Nettle, and most other plants of the order, and are capable of being manufactured into cloth. The young shoots, blanched by earthing them up in the spring, make an excellent substitute for Asparagus.

Order V. HEXANDRIA.

Genus CCCCXCI. TAMUS. *Black Bryony.*

Nat. Order. Dioscoreaceæ.

Gen. Char. *Barren flower. Perianth* 6-parted, spreading. —*Fertile flower. Perianth* 6-parted, contracted at the neck. *Stigmas* 3. *Berry* inferior, 3-celled.

A small genus of perennial herbs, natives of Europe. They have long, weak, twining stems; alternate, entire, smooth leaves; and small, greenish-white flowers, in raceme-like panicles. Fruit berry-like. The base is a large, fleshy tuber, abounding in feculent matter, but not capable of being

employed as food on account of the bitter and acrid principle with which it is mingled. The *Dioscoreas*, or Yams, which supply the place of the Potato in tropical countries, are plants nearly allied to these.

TAMUS COMMUNIS. *Common Black Bryony.* TAB. **1390.**

Leaves heart-shaped, acute, undivided.

Tamus communis, *E. B.* 91. *Smith* IV. 241. *Lindley* 271. *Hooker ed.* 2. 432. *ed.* 3. 440. *ed.* 4. 376. *Macreight* 234.

Common in most parts of England, in hedges, woods and thickets. Stems weak, twining round everything within their reach, and thus ascending or creeping among trees and bushes to a considerable distance. Leaves glossy, very deep green. Berries red when ripe, insipid. Flowers in June.

The large root is black on the outside, and so acrid in a recent state, that it was formerly employed, scraped or beaten into a pulp, as a stimulating plaster.

This plant must not be confounded with the Common Bryony, Tab. 1312, which, although dioecious, is a member of a monoecious genus, and differs widely likewise in regard to natural affinity.

ORDER VI. OCTANDRIA.

GENUS CCCCXCII. POPULUS. *Poplar.*

Nat. Order. AMENTACEÆ. *Juss.* SALICACEÆ, *Lindley.*

GEN. CHAR. *Catkins* cylindrical; their scales lacerated at the apex.—*Barren flower. Stamens* 8 to 30; arising from an obliquely-truncated cup (calyx) at the base of the scale. —*Fertile flower. Calyx* resembling that of the barren one. *Stigmas* 4 or 8. *Fruit* nearly 2-celled, in consequence of the rolling inwards of the margins of the valves. *Seeds* comose.

Trees of the northern hemisphere. They have alternate, generally deltoid leaves, more or less lobed and serrated, and with the principal veins deliquescent before they reach the margin.

The Poplars are mostly of rapid growth, and many of the species attain the height of 80 or 100 feet. Their wood is white, light and soft, but being tough and not liable to warp, is much esteemed for many purposes as timber.

POPULUS ALBA. *Great White Poplar. Abele Tree.* TAB. **1391.**

Leaves triangularly heart-shaped, lobed and toothed; smooth above, downy and very white beneath. Fertile catkins subovate. Stigmas 4.

Populus alba, *E. B.* 1618. *Smith* IV. 243. *Lindley* 238. *Hooker ed.* 2. 432. *ed.* 3. 440. *ed.* 4. 376. *Macreight* 215.

Not uncommon in moist woods and hedges, especially in alpine districts. A large tree, with smooth bark, and horizontally spreading branches. Leaves with blunt angles, more or less deeply cut, and variously toothed; dark-green and smooth above; beneath, thickly clothed with a snow-white down. Stipules linear. Barren catkins long, cylindrical: fertile ones scarcely an inch in length, ovate, with smaller scales. Anthers violet-coloured, about 8 or 12, but often more numerous. Flowers in March and April.

The wood is of a close grain, and used by the turner for articles of coarse workmanship. Its lightness is a recommendation in the manufacture of butchers' trays and other portable wooden vessels. It is a tree of quick growth, especially in a soil retentive of moisture, but injurious to pastures in consequence of its roots spreading widely, and throwing up an abundance of suckers.

POPULUS CANESCENS. *Grey Poplar.* TAB. **1392.**

Leaves roundish, deeply waved and toothed; hoary and downy beneath. Fertile catkins cylindrical. Stigmas 8.

Populus canescens, *E. B.* 1619. *Smith* IV. 243. *Lindley* 238. *Hooker ed.* 2. 432. *ed.* 3. 440. *ed.* 4. 376. *Macreight* 215.

Found both in wet turfy meadows, and on dry heaths. In Norfolk it is frequent and apparently wild. A tall and handsome tree, once regarded as a variety of the preceding, but differing in the branches being more upright and compact, the leaves rounder, less deeply lobed, and not so densely downy and white on the under side. The fertile catkins too are longer, and their scales more deeply laciniated. The number of stigmas furnishes a less constant character of distinction. Flowers in March.

It grows more slowly than *P. alba*, but the wood is said to be far superior. It resembles that species in throwing up suckers all around the trunk.

POPULUS TREMULA. *Aspen Tree.* TAB. **1393.**

Young branches hairy. Petioles very much compressed. Leaves nearly orbicular, broadly toothed, smooth on both sides. Stigmas 4, erect, with 2 auricles at the base.

Populus tremula, *E. B.* 1909. *Smith* IV. 244. *Lindley* 238. *Hooker ed.* 2. 433. *ed.* 3. 440. *ed.* 4. 376. *Macreight* 215.

A native of moist woods; frequent in Scotland, where, according to Hooker, it is found "even at an elevation of 1500 feet above the sea, on Ben More, in Mull." The tree, when full-grown, attains a considerable height, with a round, spreading top. The petiole being long, and flattened vertically to the plane of the leaf, the latter is shaken by the slightest movement in the air, when those of other trees are at rest; hence the quivering of an Aspen-leaf has become proverbial. Fertile catkins 2 inches long, hairy; their scales palmate and jagged. Germen short and thick. Stigmas crimson, li-

near, with a pair of reflexed, ovate, notched appendages at the base. Flowers in March and April.

This tree is equally injurious to meadows and pasture-land as the two preceding, its spreading roots and numerous suckers preventing the growth of grass around it. The light, white, soft wood is of a fine grain, and durable in the air: milk-pails are made of it, but the patten- and clog-makers are its chief consumers. A tradition is current among the Highlanders, that the cross was made of Aspen-wood, and that its leaves have never been able to rest since the crucifixion.

POPULUS NIGRA. *Black Poplar.* TAB. **1394.**

Leaves deltoid, pointed, serrated, smooth on both sides. Catkins cylindrical, lax. Stigmas 4.

Populus nigra, *E. B.* 1910. *Smith* IV. 245. *Lindley* 238. *Hooker ed.* 2. 433. *ed.* 3. 441. *ed.* 4. 377. *Macreight* 215.

Not unfrequent in watery places, and by the sides of ponds and rivers. A large tree, of rapid growth, with a thick and somewhat spongy bark. Leaves triangular, and nearly equilateral, more or less rounded at the base; more regularly serrated than in either of the preceding species, and never lobed. Catkins long, very loose and pendulous. Germen lanceolate. Flowers in April.

Its wood is of small account, being far inferior to that of most other species of the genus. It is not even fit to burn, Poplar-wood in general not being very combustible. The tree, however, is handsome, and less intrusive than its native congeners, the roots not spreading so near the surface, and not sending up suckers.

GENUS CCCCXCIII. RHODIOLA. *Rose-root.*

Nat. Order. CRASSULACEÆ.

GEN. CHAR. *Calyx* 4-parted. *Petals* 4. *Nectariferous glands* 4, emarginate.—*Barren flower:* with 4, more or less developed, but generally imperfect germens.—*Fertile flower. Germens* 4. *Capsules* 4; many-seeded.

Herbs of succulent habit; with simple leaves and small, yellow, terminal, cymose flowers. They are so nearly allied to *Sedum* in the class Decandria, that by many botanists our British species is referred to that genus. The only important difference consists in the quaternary division of the flowers and their dioecious or sub-dioecious habit: the latter character, it should be observed, is not of rare occurrence in *Sedum* itself and its kindred genus *Sempervivum*. Two species only are known.

RHODIOLA ROSEA. *Rose-root.* TAB. **1395.**

Leaves obovato-oblong, serrated upwards. Cyme sessile, subcapitate.

Rhodiola rosea, *E. B.* 508. *Smith* IV. 246. *Lindley* 64. *Hooker ed.* 2. 433. *ed.* 3. 441. *ed.* 4. 377. *Macreight* 88.

Frequent on moist rocks about the summits of the highest mountains of England, Scotland and Ireland. The root is large, woody and somewhat fleshy, with a grey, satiny bark, and when dry smells like rose-water, whence the name. The general habit of the plant is that of *Sedum Telephium*. Stems 6 or 8 inches high, simple; clothed with flat, obovate, pointed, fleshy leaves, serrated above, glaucous, and in the sterile plant usually tipped with crimson. Flowers in June. Perennial.

Order VII. ENNEANDRIA.

Genus CCCCXCIV. MERCURIALIS. *Mercury.*

Nat. Order. Euphorbiaceæ.

Gen. Char. *Calyx* 3-parted. *Corolla* none.—*Barren flower. Stamens* 9 to 12. *Anthers* with 2 globose lobes.—*Fertile flower. Germen* double, with 2 opposite furrows; accompanied by 2 sterile filaments proceeding from either furrow. *Styles* 2. *Capsule* 2-celled; cells 1-seeded.

European herbs, or under-shrubs, with opposite, simple leaves, and green, inconspicuous flowers. They are chiefly noticed as noxious and troublesome weeds, and are all more or less poisonous, partaking of an acrid cathartic quality predominating in the natural order to which the genus belongs.

MERCURIALIS perennis. *Perennial Mercury. Dog's Mercury.* Tab. **1396.**

Root (subterranean stem) creeping. Stem simple. Leaves rough. Mercurialis perennis, *E. B.* 1872. *Smith* IV. 248. *Lindley* 223. *Hooker ed.* 2. 433. *ed.* 3. 441. *ed.* 4. 377. *Macreight* 204.

Very common in woods and shady places, creeping so widely and rapidly beneath the soil as to be with difficulty eradicated. Stems about a foot high, angular, and rough; never branched. Leaves opposite, on short petioles, ovate, serrated; mostly occupying the upper part of the stem. Flowers in loose-set, axillary spikes. Fruit rough. Perennial. Flowers in April and May.

A very poisonous plant, though reported in some old botanical works to be eatable when boiled. Ray relates a case in which a family of five persons suffered severely from eating it fried with bacon. It is highly noxious to sheep. The leaves when dried acquire a bluish-black colour.

MERCURIALIS annua. *Annual Mercury.* Tab. **1397.**

Root fibrous. Stem with opposite branches. Leaves smooth.

Mercurialis annua, *E. B.* 559. *Smith* IV. 248. *Lindley* 223. *Hooker ed.* 2. 433. *ed.* 3. 441. *ed.* 4. 377. *Macreight* 204.

This species, though not so common as the preceding, is far from being of unfrequent occurrence, both on waste and cultivated ground, in the vicinity of towns and villages. A foot high. Herb smooth, of a dark, shining green, with a fœtid smell somewhat resembling that of the Elder. Leaves ovato-lanceolate, acute, distantly serrated. Barren flowers in long, interrupted, axillary spikes; fertile ones axillary, about 2 together. Annual. Flowers in August.

Probably an introduced plant, having formerly been used medicinally. It contains more mucilage than *M. perennis*, and is less dangerous; indeed it is said to be eaten in some parts of Germany, boiled like spinach, but the water in which it has been cooked is unwholesome.

Professor Burnet observed that the barren flowers, when mature, separate from the stalk with an elastic force that bears them to a considerable distance, a contrivance probably intended to insure the fertilization of the pistilline ones in their vicinity.

MERCURIALIS AMBIGUA. *Ambiguous Mercury.* TAB. **1397***.

Stems with opposite branches. Leaves lanceolate, unequally serrated, ciliated. Barren and fertile flowers intermixed in axillary whorls.

Mercurialis ambigua, *Linn. E. B. Supp. new series* 2816. M. annua *β* ambigua, *De Candolle. Hooker ed.* 4. 377.

Frequent in Jersey upon waste, stony land, by road-sides; likewise in the Isle of Wight. Annual. Flowers in July.

Whether a distinct species, or only a variety of *M. annua*, is at present doubtful. Its habit is very different.

GENUS CCCCXCV. HYDROCHARIS. *Frog-bit.*

Nat. Order. HYDROCHARACEÆ.

GEN. CHAR. *Flowers* spathaceous.—*Barren plant. Spathe* 2-parted, 3-flowered. *Calyx* 3-parted. *Petals* 3. *Stamens* 9, in 3 series. *Abortive styles* 3.—*Fertile plant. Spathe* sessile, 1-flowered. *Calyx* and *corolla* like the former. *Filaments* 6, abortive. *Styles* 6, each bearing a bifid stigma. *Capsule* inferior, coriaceous, roundish, 6-celled; cells many-seeded.

The type of an interesting order of water-plants. A single species only is comprised in the genus.

HYDROCHARIS MORSUS-RANÆ. *Common Frog-bit.* TAB. **1398**.

The only known species.

Hydrocharis Morsus-Ranæ. *E. B.* 808. *Smith* IV. 250. *Lindley* 254. *Hooker ed.* 2. 434. *ed.* 3. 441. *ed.* 4. 377. *Macreight* 221.

An elegant aquatic herbaceous plant, frequent in ponds, ditches and slow streams, in England and Ireland. Stems floating in the water and sending down long perpendicular fibres to the mud beneath. Leaves on long petioles, kidney-shaped, entire, smooth, floating; purplish and dotted on the under surface. Flowers large, compared with the size of the plant, white, fugaceous; arising one at a time from semitransparent, membranaceous spathes or sheaths. Perennial, and when undisturbed increasing rapidly. Flowers in July.

It is very ornamental on the margins of fish-ponds and canals, and deserving of cultivation, as are many others of our indigenous water-plants.

Order VIII. MONADELPHIA.

Genus CCCCXCVI. JUNIPERUS. *Juniper.*

Nat. Order. Coniferæ.

Gen. Char. *Barren plant. Catkins* ovate; their scales subpeltate, bearing from 4 to 8 1-celled anthers.—*Fertile plant. Cone* globular, consisting of 3 fleshy scales; eventually consolidated and forming a berry-like fruit, containing 3 bony, 1-seeded nuts.

Shrubs or, rarely, trees, abounding in resinous matter; natives chiefly of the cold, temperate and mountainous countries of the northern hemisphere. They have small, linear, pungent, persistent leaves. The berries are truly catkins, of which only the 3 uppermost scales are fertile. The timber of the larger or arborescent species is valuable, especially that of *J. Virginia*, *J. Barbadensis*, and *J. Bermudiana*, the last of which affords the soft, fragrant wood used in cabinet-work, and in the manufacture of the black-lead pencils, under the name of Red-Cedar.

JUNIPERUS communis. *Common Juniper.* Tab. **1399.**

Stem erect. Leaves 3 in each whorl; linear, ending in a spine, spreading, longer than the ripe fruit.

Juniperus communis, *E. B.* 1100. *Smith* IV. 251. *Lindley* 241. *Hooker ed.* 2. 434. *ed.* 3. 442. *ed.* 4. 377. *Macreight* 219.

The Juniper is a local plant, though generally abundant in those parts of the country where it grows naturally. It prefers open, hilly spots, on a chalky or limestone soil; and forms a compact, almost impenetrable bush, with spreading interwoven branches. Leaves smooth, linear, terminating in a sharp point, glaucous on the upper side. Catkins small, axillary, yellowish-brown. Berries nearly globular, bluish-black, with a glaucous tinge: they do not attain maturity until the end of the second summer; so that the flower, the

green and the ripe fruit may be gathered at the same time. It varies in size from a low bush to the height of a small tree. Flowers in May and June.

The wood is reddish, and sometimes used for veneers. The berries yield a great quantity of sugar by boiling, and the decoction being fermented is a common drink in Sweden. Their chief consumption is in flavouring ardent spirit, and for this and medicinal purposes from 600 to 800 tons are annually imported hither from the continent. But the quantity is small compared with that of the "fire-water which is supposed to be imbued with their juice, and consumed under the name of Geneva," or in short "Gin"; a corruption of the French "*genèvre*," as both that and the Latinized generic are of the original Celtic name of the shrub, "*jeneprus*," rude or rough, from its sharp, prickly leaves. Our distillers make up the deficiency by the substitution of oil of turpentine; a practice countenanced in a great measure by the very heavy duty, amounting to about 100 per cent., imposed upon the berries imported, and which probably constitutes the only difference between the foreign Hollands, as it is termed, and the English gin. In medicine the fruit of the Juniper is employed as a stimulant and diuretic.

Juniperus nana, *E. B. Supp.* 2743, differs from the common Juniper, in being procumbent, with smaller leaves, and oval, instead of globular fruit. It is generally considered only a variety; see Tab. **1399***.

Genus CCCCXCVII. TAXUS. *Yew.*

Nat. Order. Coniferæ.

Gen. Char. *Barren flowers* in small oval catkins, which are scaly at the base. *Stamens* 8 or 10. *Anthers* peltate, 6- to 8-celled: cells opening beneath.—*Fertile flower* solitary, scaly at the base. *Nut* 1-seeded, inclosed in a succulent cup.

Trees of the northern hemisphere; with smooth, linear, evergreen foliage, and succulent, drupe-like fruit. The species yet described amount to 5 or 6; they are chiefly met with in the alpine districts of Europe and Asia; one is indigenous to North America, *T. Canadensis*.

The fruit of the Yew bears about a similar relation to the cone, as the acorn of the Oak does to the catkin; the upper scales only being floriferous in both instances, the lower ones barren.

TAXUS baccata. *Common Yew.* Tab. **1400**.

Leaves linear, acute, crowded, distichous. Flowers axillary, sessile. Fruit roundish.

Taxus baccata, *E. B.* 746. *Smith* IV. 253. *Lindley* 241. *Hooker ed.* 2. 434. *ed.* 3. 442. *ed.* 4. 378. *Macreight* 218.

The Yew delights in mountainous or rocky woods, especially on a calcareous soil, and in a wild state is often seen springing from the cleft of a precipice, and stretching its broad, fan-like branches over the mountain torrent. The trunk is always very erect, and is covered with a smooth, annually deciduous bark: though never remarkable for height, its diameter is in many recently, and perhaps still, existing specimens considerable. The Crowhurst Yew, near Hastings, measured 30 feet in circumference. In Pennant's time, the Fortingal Yew, in Perthshire, measured 56½ feet. The famous Hedsor Yew has a diameter of more than 27 feet, being about 82 feet in girth. The last tree is not equalled by any now living in this kingdom, but there are numerous others extant in our churchyards that bid fair to rival that of Fortingal, if they do not so already. Leaves distichous or pointing two ways, dark-green above and shining; pale beneath. Berries scarlet, drooping from the under side of the more or less horizontal branches; they have a sweet, mawkish flavour. Flowers in March and April.

The wood of the Yew is hard, close-grained and very tough: in ancient times it was greatly in repute for making the long bows, the pride of our English yeomanry; and as the consumption of it for this purpose was far greater than the home supply, merchants trading to Venice were compelled by law to bring 10 bow-staves for every butt of malmsey imported. It has been supposed that the Yew was planted in our churchyards for the purpose of furnishing the villagers with bows; but it was more probably placed there as an emblem of immortality, and sacred to religious purposes. The wood is of a reddish hue, knotty and beautifully variegated, hence good specimens are highly prized by the turners and cabinet-makers. Although the succulent portion of the fruit may be eaten with impunity, the rest of the plant is poisonous. Cows are frequently killed by browsing upon the young shoots, and the leaves are fatal to the human species: they seem to destroy life by their powerful sedative effect, and have lately been recommended medicinally, by a physician on the continent, in very small doses, as a substitute for Digitalis; most of their virtue is said to be dissipated by drying.

T. fastigiata, the Irish, or Florence-court Yew, *Lindley* 241, *Macreight* 218, is very different in its habit, and is probably a distinct species. It is distinguished by having scattered, crowded leaves, and oblong fruit. Though long since known in our gardens and plantations, it was originally introduced from the continent. The generic name, Taxus, is derived from the Greek Τοξον, a bow. Yew, in Saxon *iw*, green, alludes to its evergreen habit.

Class XXIII. POLYGAMIA.

Order I. MONOECIA.

Genus CCCCXCVIII. ATRIPLEX. *Orache.*

Nat. Order. Chenopodiaceæ.

Gen. Char. *Hermaphrodite and Barren flowers. Calyx* 5-parted, inferior. *Stamens* 5. *Pistillum* with 2 styles, but usually imperfect.—*Fertile flower. Calyx* 2-parted, the segments parallel; united after flowering and forming a cover for the fruit. *Styles* 2. *Fruit* 1-seeded, covered by the enlarged, persistent perianth.

A large genus, consisting chiefly of annual herbs, scattered over various parts of the world, but mostly in temperate climates. They have alternate or opposite, simple, exstipulate leaves, and small, green, inconspicuous flowers. A few species, found in warm climates, are perennial and assume a shrubby habit. Some are occasionally eaten in Europe as potherbs, but generally speaking they are mere weeds, and neither estimated by man as ornamental or useful, however important may be their ministry for his welfare in the grand œconomy of nature.

ATRIPLEX portulacoides. *Shrubby Orache. Sea Purslane.* Tab. **1401**.

Stem somewhat shrubby. Leaves obovato-lanceolate, entire, silvery-white.

Atriplex portulacoides, *E. B.* 261. *Smith* IV. 256. *Lindley* 216. *Hooker ed.* 2. 435. *ed.* 3. 443. *ed.* 4. 378. *Macreight* 196.

Far from uncommon on the sea-shore, growing either in sand or mud, generally the latter. Stems slender, branched, woody, quadrangular above, 1 or 2 feet high. Leaves opposite, varying from obovate to lanceolate. Flowers yellowish, in interrupted, axillary spikes. The whole plant is of a glaucous silvery hue. Perennial. Flowers in July and August.

It yields a large quantity of soda.

ATRIPLEX laciniata. *Frosted Sea Orache.* Tab. **1402**.

Stem herbaceous, spreading. Leaves ovate, somewhat deltoid, toothed and sinuated; very mealy beneath.

Atriplex laciniata, *E. B.* 165. *Smith* IV. 257. *Lindley* 217. *Hooker ed.* 2. 435. *ed.* 3. 443. *ed.* 4. 378. *Macreight* 96.

Not unfrequent on sandy sea-shores. Stems generally prostrate, branched, zigzag, mostly of a reddish hue. Leaves alternate, more or less triangular, unequally and deeply toothed and sinuated; clothed, especially on the under side, with white, silvery scales. Barren or mixed flowers, in short, terminal spikes; fertile ones axillary, mostly solitary. Calyx of the fruit generally large, with lateral protuberances. Nut large, compressed. Flowers in July and August. Annual.

The whole plant has a hoary hue, as if dusted with meal.

ATRIPLEX PATULA. *Spreading Halberd-leaved Orache.* TAB. **1403.**

Stem herbaceous, spreading. Leaves triangular-hastate, smooth above, irregularly lobed and toothed; the uppermost narrower, nearly entire. Calyx of the fruit more or less tuberculated at the sides.

Atriplex patula, *E. B.* 936. *Smith* IV. 257. *Lindley* 217. *Hooker ed.* 2. 435. *ed.* 3. 443. *ed.* 4. 379. *Macreight* 196.

Common on dung-hills and on both waste and cultivated ground, as well as in salt-marshes. Stems straggling, striated, with numerous long, spreading branches. Leaves alternate, petiolate, mealy beneath. Flowers green, forming small clusters upon long, interrupted, axillary and terminal spikes. Valves of the fruit-calyx triangular, acute, toothed about the lateral angles, studded in the middle with a few prominent tubercles. Annual. Flowers in July.

By the sea-side the whole plant is procumbent, more fleshy, reddish, and all the leaves sometimes entire.

ATRIPLEX ANGUSTIFOLIA. *Spreading Narrow-leaved Orache.* TAB. **1404.**

Stem herbaceous, spreading. Leaves lanceolate, entire; the lower ones partly 3-lobed. Calyx of the fruit hastate, slightly tuberculated at the sides.

Atriplex angustifolia, *E. B.* 1774. *Smith* IV. 258. *Lindley* 217. *Hooker ed.* 2. 435. *ed.* 3. 443. *ed.* 4. 379. *Macreight* 196.

About as common as the last, in similar situations, and often growing with it. Stems of a deep glaucous hue, 3 or 4 feet long. Not unlikely to be a variety of *A. patula*, as it differs chiefly in the narrower, and less sinuated or lobed leaves. Annual. Flowers in July.

ATRIPLEX ERECTA. *Upright Spear-leaved Orache.* TAB. **1405.**

Stem herbaceous, erect. Leaves ovato-lanceolate; lower ones sinuated. Calyx of the fruit armed all over with sharp tubercles.

Atriplex erecta, *E. B.* 2223. *Smith* IV. 260. *Lindley* 217. *Hooker ed.* 2. 435. *ed.* 3. 443. *ed.* 4. 379. *Macreight* 196.

Rare, on waste ground. Found near the entrance to Battersea-fields from Nine Elms. Stem erect, much branched, terminating in a sort of panicle, formed of numerous, interrupted spikes of small

clustered flowers. Leaves petiolate, sprinkled with crystalline glands, as well as the stem. Calyx of the fruit beset with rows of sharp, somewhat leafy points. Annual. Flowers in August.

ATRIPLEX LITTORALIS. *Grass-leaved Sea Orache.* TAB. **1406.**

Stem herbaceous, erect. Leaves all linear, entire or variously toothed. Calyx of the fruit sinuated, and muricated on the back.

Atriplex littoralis, *E. B.* 708. *Smith* IV. 260. *Lindley* 217. *Hooker ed.* 2. 436. *ed.* 3. 443. *ed.* 4. 379. *Macreight* 196.

Not unfrequent in muddy salt-marshes on the eastern and southern coasts of England. Stem erect, angular; with upright, leafy branches. Leaves alternate, petiolate, linear-lanceolate; the upper ones subentire, the lower generally toothed or sinuated. Flowers brownish-green, in dense, obtuse, terminal and axillary spikes. Annual. Flowers in July.

The under side of the leaves, as well as the flowers and young branches, is mealy.

ATRIPLEX PEDUNCULATA. *Pedunculated Sea Orache.* TAB. **1407.**

Stem herbaceous, zigzag; with divaricating branches. Leaves obovato-lanceolate, entire. Seed-bearing flowers stalked.

Atriplex pedunculata, *E. B.* 232. *Smith* IV. 261. *Lindley* 217. *Hooker ed.* 2. 436. *ed.* 3. 444. *ed.* 4. 379. *Macreight* 197.

A native of salt-marshes near the sea, chiefly on the east and south coasts of England. Stem angular, alternately branched. Leaves somewhat elliptical, very entire. Flowers in small, axillary spikes, which are converted into racemes as the fruit ripens, and becomes elevated upon rather long peduncles. Fruit wedge-shaped, 2-horned. Annual. Flowers in August and September.

The whole herb has a glaucous hue, being covered with a scaly mealiness.

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—— 44, *for* Carex Vhalii, *read* Carex Vahlii.

Printed by Richard and John E. Taylor, Red Lion Court, Fleet Street.



Orchis pyramidalis.



Orchis Morio.

Sept 1 1809 published by J.ᵉˢ Sowerby London.

631.
11.05.



Orchis masculа.

Pub.d 1 1795 by Sowerby & Co.

1196.



Orchis ustulata.

J. Sowerby del.t May 1 1791.

1107.



Orchis fusca.



1873
1198.



Orchis
tephrosanthos.

Apr. 1. 1808. Published by Jas. Sowerby London.

1109.



Orchis hircina.

J. Sowerby del. et sc. 1791



Orchis latifolia.

July 1, 1820, published by J. & A. Arch

632.
1201.



Orchis maculata.

1202.



Gymnadenia conopsea.

J. Sowerby delt. Mar. 1. 1791.



Habenaria viridis.

1204.



1205.



Habenaria bifolia.

J. Sowerby del.t July 1 1791

2806.
1205*



August 1st 1837.

1206.



Acerus anthropophora.

J. Sowerby del.t Sept.r 1791.



Herminium monorchis.

1208.



Ophrys apifera.



Ophrys aranifera.



Jan.y 1st 1830.





July 1st 1830.

61.
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Ophrys muscifera.

1211.

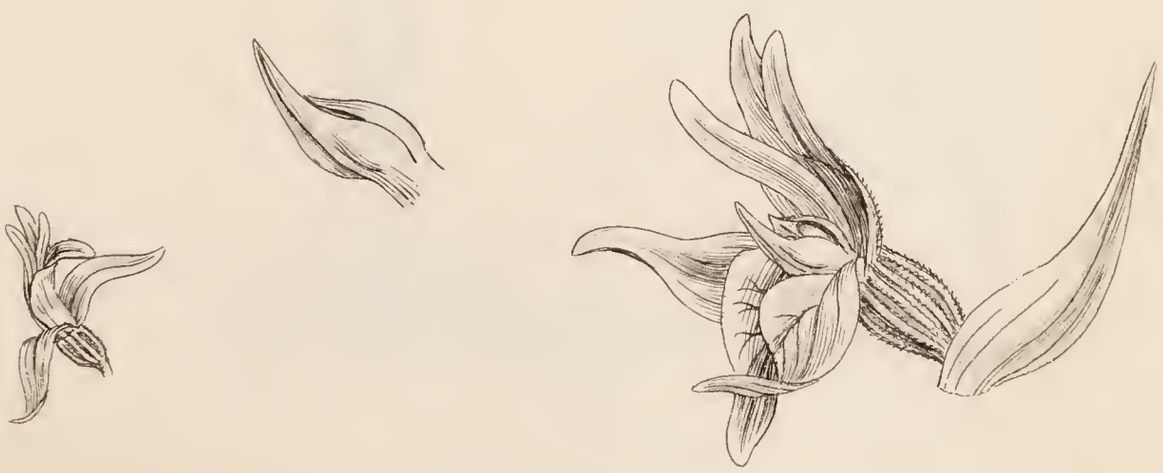


Goodyera repens.



Neottia spiralis.





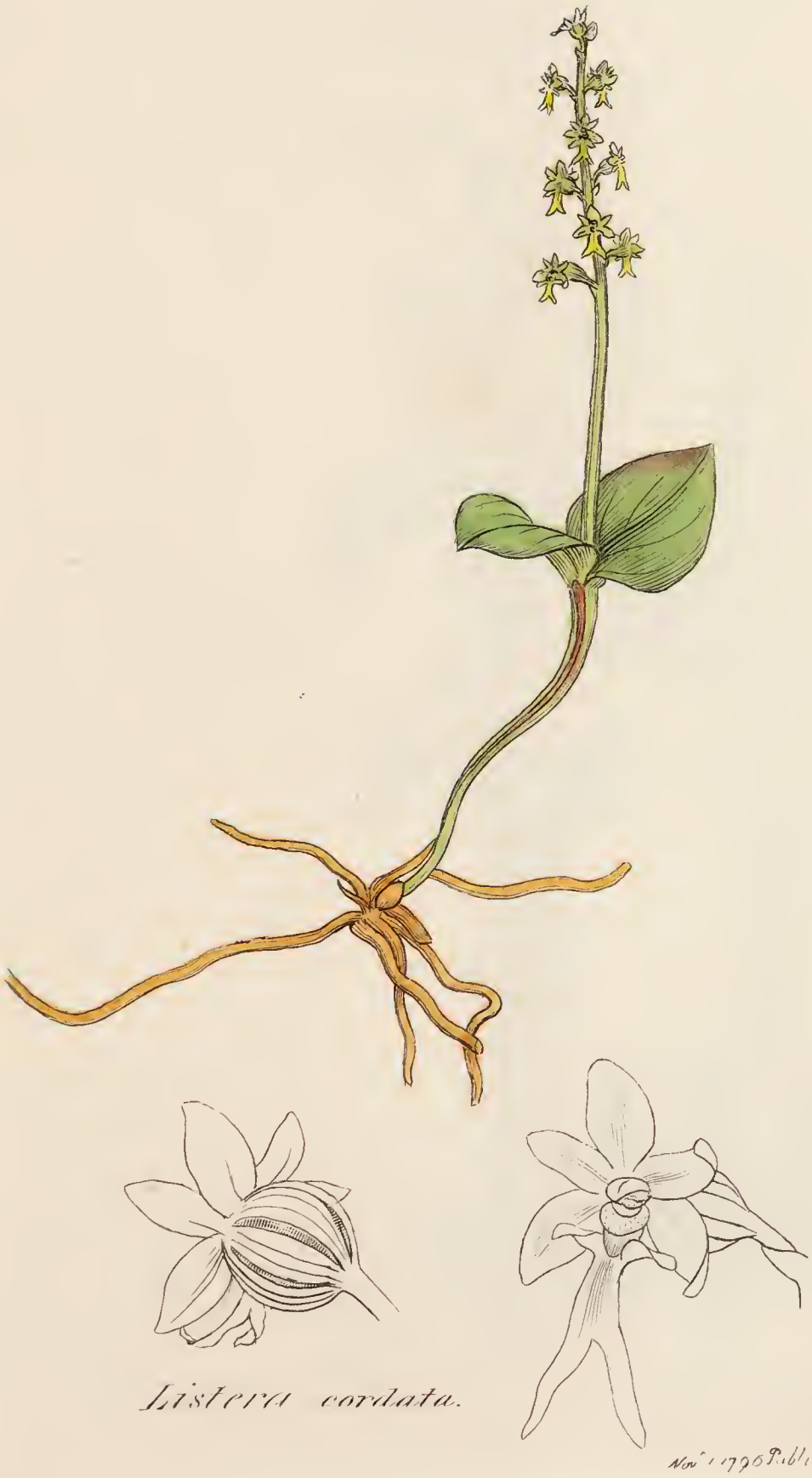
1548

1213.



Listera ovata.

Jan.ʸ 1 1805. Published by Jas Sowerby, London.



Listera cordata.

Nov.1 1796 Published by J. Sowerby



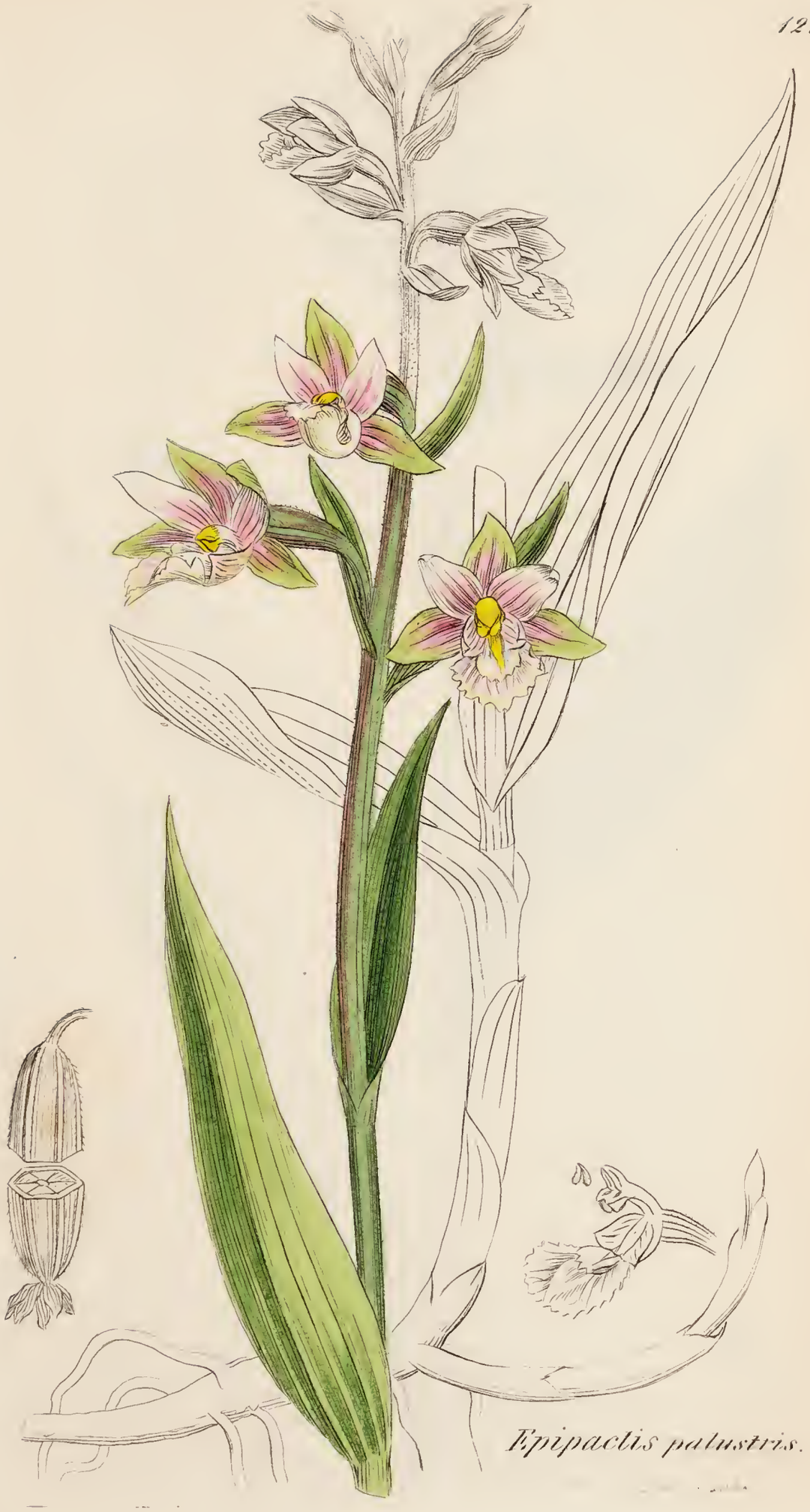
Listera Nidus-Avis.



Epipactis latifolia.

2775
1216*





Epipactis palustris.



Epipactis grandiflora.

Aug.st 1 1835 Pub.d as the Act directs by J. Sowerby London



Epipactis ensifolia.

1220.



Epipactis rubra.

Nov.r 1, 1777 Published by J.r Sowerby &c.



Malaxis paludosa.

47

1222.



Liparis Loeselii.

1547

1223.



Corallorhiza innata.

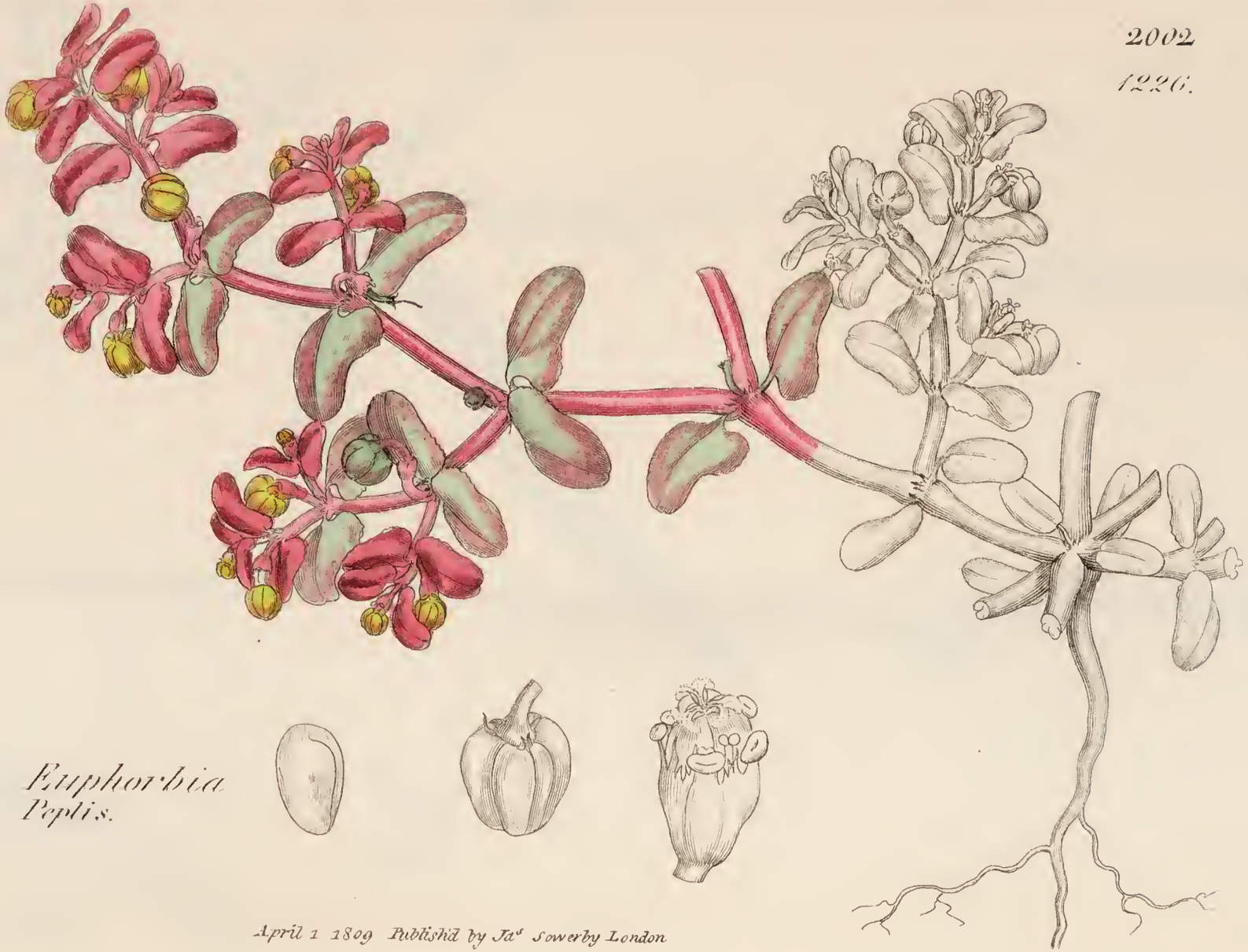
Jan.ʸ 2.ⁿᵈ 1.ˢᵗ Pub. d by Jaˢ Sowerby Londᵃ



Cypripedium Calceolus.



Aristolochia Clematitis.



Euphorbia
Peplis.

April 1 1809 Publishd by Jas Sowerby London





Euphorbia
helioscopia.

1337

1228.



Euphorbia Hiberna.

July 1. 1804. Publish'd by Jos. Sowerby, London.

1226.



Euphorbia platyphylla.



Euphorbia Esula.

840
1231.



Euphorbia
Cyparissias.

Pub. 1 Jan. 1 1798 Published by Jas Sowerby, London.



Euphorbia Paralias



Euphorbia
Portlandica.

Jan.ʸ 1798. Pub.ᵈ [illegible] by [illegible] Sowerby Lambeth.

1336

1234.



Euphorbia exigua.

July 1 1824 Published by [illegible]

959.
1235.



Euphorbia Peplus.

2255.
1236.



Euphorbia Lathyris.

Nov: 1st published by Jn.° Sowerby London.



Euphorbia amygdaloides.



Euphorbia
Characias.

January 1st 1797 Published as the Act directs by Sowerby & Taud.



Callitriche verna.

1844

1240.



Zannichellia palustris.

Feb.1.1844. Published Ja.s Sowerby, London.



Typha latifolia.





July 1st 1830.



Feb.y 1st 1832.



Typha angustifolia.



Typha minor.

744.

1244.



Sparganium ramosum.



Sparganium simplex.

1246.



Sparganium natans.

Sow.t 1795 Published by J. & ... Lee & Co

543

1247.



Carex dioica.

Jan. 1st 1835 by Pamela Lowerby London

1248.



1810 published by J.s Sowerby London.

Carex Davalliana.

1051

1240.



Carex pulicaris.

Augt 1. 1 [illegible] Published by [illegible] Sowerby, [illegible]



Carex incurva.

Sept. 1. 1801. Published by Jas. Sowerby, London.

9.23
1251.



Carex arenaria.

1252.



July 1 1806 published by Jas Sowerby London

Carex intermedia.

1253.



Carex divisa.

Nov.r 1. 1802 Published by Jas. Sowerby London.



Carex muricata.

Nov.1 1802. Published by Jas. Sowerby, London

629
1255.



Carex divulsa.



Carex vulpina.

Asch. 1798 P. Mach. by Jf. formerly London

1065.
1257.



Carex teretiuscula.

Sept.r 1. 1802. Published by Jas Sowerby. London.



October 1st 1829.

1258.



Carex paniculata.

1

2

1259.



Carex stellulata.

Nov.r 1 1806. Published by Jas. Sowerby, London

2815
1259*



March 1st 1838.

1260.



Carex acuta.

Nov.1.1804. Published by Ja. Sowerby, London.

1261.



Carex elongata.

Aug 1.1808. Published by Jo.ª Sowerby London.

1262.



Carex ovalis.

Febr.y 1796 Published by Js Lowerby

832.

1263.



Carex remota.

1264



Carex axillaris.

Published by J. Sowerby Lond.

1265.



Carex pulla.

Aug.t 1.1809 published by Ja.s Sowerby London.

1266.



Carex caespitosa.

Oct.r 1. 1815. Published by Jas. Sowerby London.

1267.



Carex rigida.

Aug 1 1809 published by Jas Sowerby London.

914.

1268.



Carex stricta.



Carex acuta.

2041

1270.



Carex pauciflora.

July 1809 published by Jas. Sowerby London.

615.
1271.



Carex digitata.

Aug.st 1 1799 Published by J.s Sowerby





Carex clandestina.

Mar 1 1810 published by J.ᵗ Sowerby Lond.ᵉ



Carex pendula.

Pubd as published by Jas Sowerby London.



Carex strigosa.

London, Published by S. Curtis, Botanic Garden, Lambeth.

995.

1275.



Carex
sylvatica.



Carex depauperata.

2293.

1277.



Carex
Michelotteri.

2069

1278.



Carex capillaris.

Oct 1 1820 published by J.ᵗ Sowerby London

1279.



Carex limosa.

July 1 1809 published by J.T. Smeeby London.



Carex rariflora.

Illustrated by Jas Sowerby Esq. etc.

1281.



Carex
Pseudo-Cyperus.

1282.



Carex ustulata.

1283.



Carex atrata.

July 1 1809 published by J.t Sowerby London

1284.



Carex pallescens.

Aug.t 1 1805 published by Jn.o Sowerby London.

1285.



Carex flava.

April 1 1804. Published by Jas Sowerby, London.

1773
1286.



Carex Oederi.

Aug 1 1807 published by Jas Sowerby London

1287.



Carex fulva.

April 1. 1804 Published by Jas. Sowerby London.



Carex extensa.

Jany 1. 1801. Published by Jas Sowerby London

1289.



Carex distans.

Nov. 1. 1803. Published by Jas. Sowerby, London.



Carex binervis.

1099
1291.



Carex praecox.

[Oct 1 1809 Published by Jas Sowerby London

885.

1292.



Carex pilulifera.



Carex tomentosa.

Aug 1st 1829 Published by S.T. Gray Lambeth.

1505

1294.



Carex pumicea.

Sept.r 1. 1805. Published by J.& J.Sowerby, London.

1506.
1295.



Carex recurva.

Sept.r 1. 1805. Published by Jn.o Sowerby London.



Carex paludosa.

1297.



Carex riparia.

April 1. 1900. Published by J. Sowerby London

1298.



Published by J.E. Sowerby, Lon. Dec.

Carex laevigata



Carex vesicaria.

Sept. 1st 1800. Published by J. Sowerby



Carex ampullacea.

July 1st 1834. Published by S. Curtis, London.



Carex hirta.



Carex
filiformis.



Elyna caricina.

Aug.st 1 1805 Published by Jas. Sowerby, London



Elyna caricina.

Jun.ᵗ 1 1805 Published by Jas. Sowerby, Lond.ⁿ

1304.



Littorella lacustris.

May 1.st 1798 Published by J. Sowerby London

1508

1305.



Alnus glutinosa.

Oct 1 [illegible] Sowerby London.

1306.



Buxus sempervirens.

Aug.t 1 1804. Published by Jas. Sowerby, L[illegible]



Urtica pilulifera.

1318.



Sagittaria
sagittifolia.

1750

1309.



Urtica dioica.

Jun. 1.1807 Published by Ja.s Sowerby, London.

2544.
1310.



Xanthium strumarium

May 1813 published by Jas Sowerby London

1311.



Amaranthus Blitum.

Published by Curtis & Co. 1804 London

1312.



Bryonia dioica.

Nov.r 1797 Published by Js Sowerby London

733.
1313.



Eriocaulon
septangulare.

947.
1314.



Ceratophyllum demersum.

Nov. 1. 1831. Published by J. Sowerby, London.

679
1315.

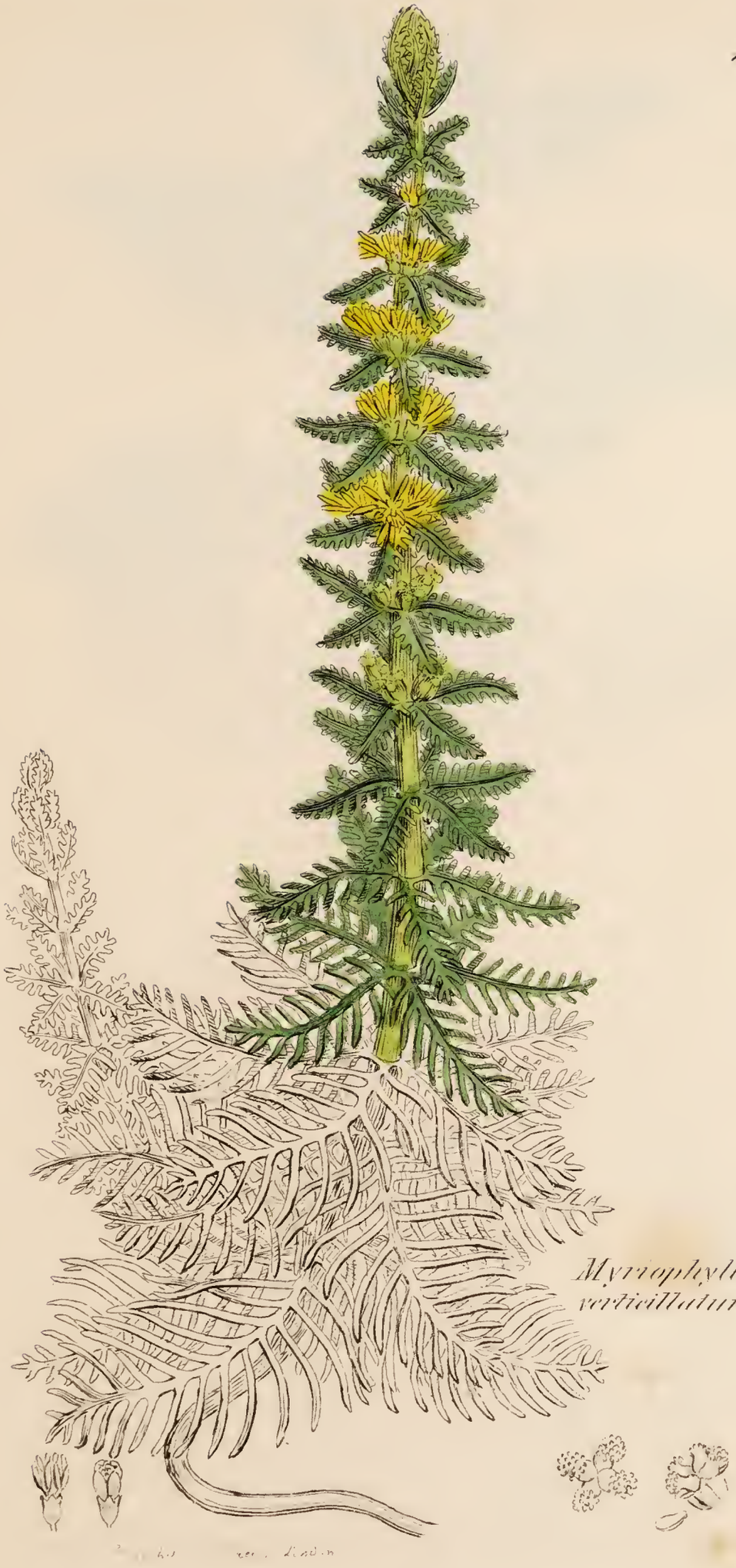


Ceratophyllum
submersum.

1316.



Myriophyllum spicatum.



Myriophyllum verticillatum.

1236

1308.



Urtica urens.

Vol.r I. 1803 Published by Jas Sowerby, London

1319.



Arum
maculatum.

April 1 1814 Published by Jas Sowerby, London

860

1821.



Poterium sanguisorba.

1342
1321.



Quercus pedunculata.

Aug.st 1. 1804. Published by Jas. Sowerby London.

1845

1322.



Quercus sessiliflora.

Feb.1.1808. Published by Jas. Sowerby London.

1846

1323.



Fagus sylvatica.

Feb.1.1808.Published by Ja.s Sowerby, London.



Castanea
vulgaris.

June 1 1831 Published by S. Curtis, London



Betula alba.

Sept. 1 1825 published by Jas Sowerby London.

2320.

1326.



Betula nana.

Oct.1 1810 published by Jas. Sowerby London.

2032

1327.



Carpinus Betulus.

June 1st 1831 published by Jas Sowerby London.

723.
1328.



Corylus Avellana.

2460.

1329.



Pinus sylvestris.

Sept. 1 1812 published by Jas. Lowe by Lindsey.

1330.



Salix purpurea.

Dec.r 1 1804. Published by Jas. Sowerby, London.

1331.



Salix Helix.

Aug.t 1 1804. Published by Jas Sowerby, London.

1359
1332.



Salix
Lambertiana.

Sept.r 1.st 1804. Published by Ja.s Sowerby London.

1333.



Salix Forbyana.

Aug.t 1. 1804. Published by Ja.s Sowerby, London.

1334.



Salix rubra.

March 1 1803 Published by Ja.s Sowerby, London.

1335.



Salix undulata.

S. Published by Jas. Sowerby London.



Salix triandra.

April 1 1805 Published by Jas Sowerby, London.

1337.



Salix amygdalina.

Sept.r 1.st 1836. Ja.s Sowerby, London.

1805

1338.



Salix pentandra.

Oct.1.1807. Published by Jas Sowerby London.

1937

1339.



Salix decipiens.

Oct. 1. 1808. Published by Jas. Sowerby London.

1340. 1807



Salix fragilis.

Nov. 1, 1807. Published by Jas. Sowerby London.

1808

1341.



Salix Rulseliana.

Nov. 1. 1807. Published by Ja.s Sowerby London.

2430.

1342.



Salix alba.

July 1.1812 published by J. & J. Sowerby



Salix vitellina.

Dec.r 1 1804 Published by Ja.s Sowerby, London

1147.

1344



Salix petiolaris.

Ap.1 1803. Published by Ja.s Sowerby, London.

1365

1345.



Salix rosmarinifolia.

Oct.r 1. 1804. Published by Jas Sowerby, London.

1346.



Salix angustifolia.

Oct.r 1 1804. Published by J.s Sowerby, Lond.

1960
1347.



Salix fusca.

Dec.ª 1808. Published by Ja.ª Sowerby, London



Salix fusca, β. repens.

Fm. by Del. ranc. 1794

1959

1340.



Salix fusca, γ, prostrata.

Dec.r 1.1808. Published by Ja.s Sowerby, London.

1962

1350.



Salix fusca, δ adscendens.

Dec.1.1808. Published by Jas. Sowerby, London.

1304

1351



Salix fusca, & argentea.

Oct. 1 1804. Published by Jas. Sowerby, London.

1908

t.352.



Salix reticulata.

Julia Lidell. Published by Jas Sowerby London.

1810

1353.



Salix glauca.

Nov. 1.1807. Published by Ja.s Sowerby London.

1809

1354.



Salix arenaria.

Nov 1 1807. Publish'd by Jas Sowerby, London.

2586.
1355.



Salix Stuartiana.

1898
1356.



Salix viminalis.

June 1. 1805. Published by Ja.s Sowerby London.



Salix
stipularis.

Sept.r 1. 1813. Published by Jas Sowerby London

1509

1358.



Salix Smithiana.

Oct. 1. 1805. Published by Jas. Sowerby, [illegible].

1350.



Salix acuminata.

March 1.1805. Published by Jas. Sowerby London

1897

1360.



Salix cinerea.

June 1.1808. Published by Jas. Sowerby London.

1437.
1361.



Salix aquatica.

April 1. 1815. Published by Jas Sowerby London.

1362.



Salix oleifolia.

Jan.y 1. 1805. Published by Jas. Sowerby London.

1487

1363.



Salix aurita.

Aug.st 1. 1805. Published by Jas Sowerby. London.

1364.



Salix caprea.

Aug.t 1. 1835. Published by Jo.n Lindley, London

2333

1365.



Salix
sphacelata.

Oct. 1. 1831. published by J. & J. Sowerby, London

1366.



Salix cotinifolia.

June 1 1805. Published by



Salix hirta.

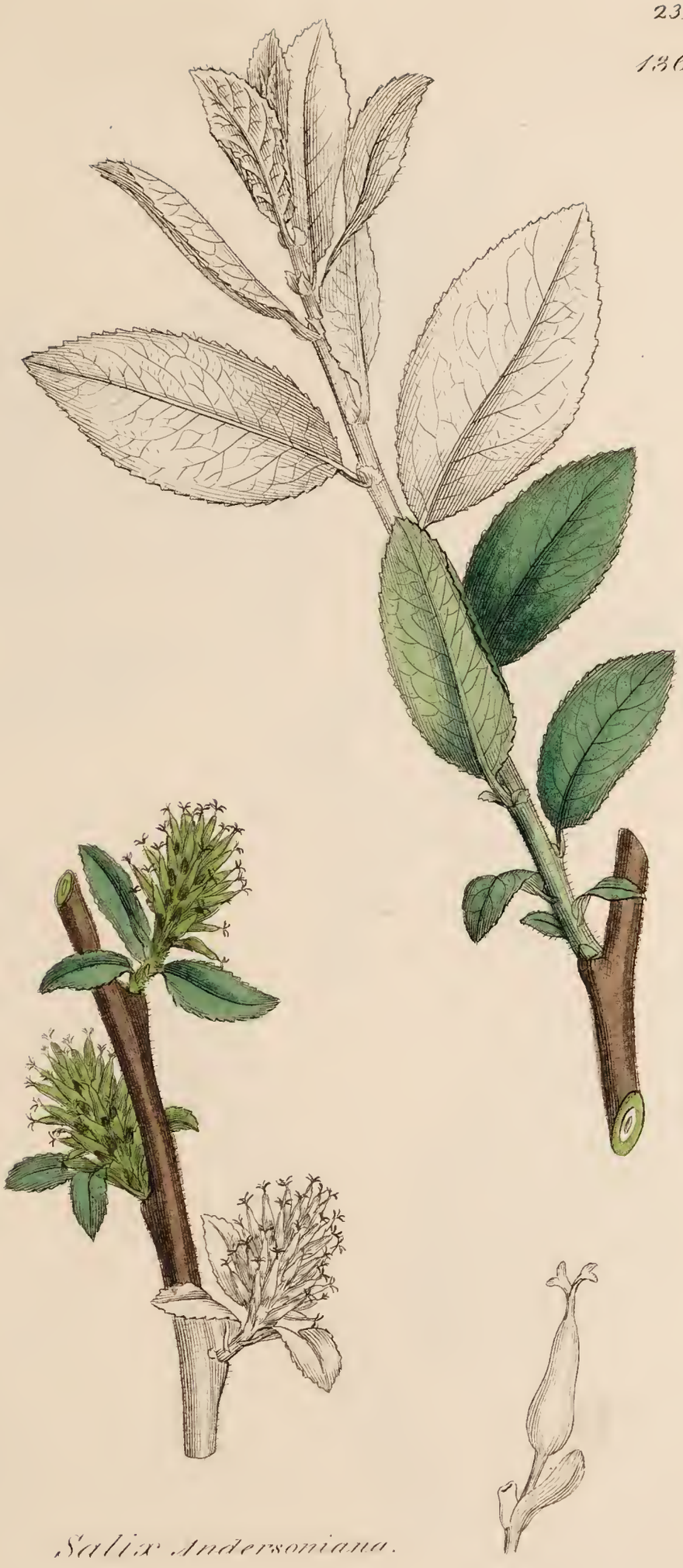
1368.



Salix
nigricans.

Sept. 1 1803 Published by Jas Sowerby London

1369.



Salix Andersoniana.

N... ...published by Jas. Smeeby, London.



Salix
Postertiana.

2342.

1371.



Salix rupestris.

Now first published by Jas Sowerby London.

1806

1372.



Salix laurina.

Oct 1st 1806 Published by Jas Sowerby London.

1958

1373.



Salix
radicans.

1374.



Salix Croweana.

March 1. 1863 Published by Jas Sowerby, London.

2186.

1375.



Salix bicolor.

Aug 1 1810 published by J.d Sowerby London.

1390

1376.



Salix Dichsoniana.

Dec.r 1 1804 Published by Ja.s Sowerby. London.

2341

1377.



Salix vaccinifolia.

Oct. 1 1815 published by Jas. Sowerby London.

1363

1378.



Salix carinata.

Oct.r 1. 1804. Published by Jas. Sowerby, London.

1361

1379.



Salix prunifolia.

Sept.r 1. 1804. Published by Jas. Sowerby, London.

1362

1380.



Salix venulosa.

Sept.r 1. 1804. Published by Ja.s Sowerby, London

1360

1381.

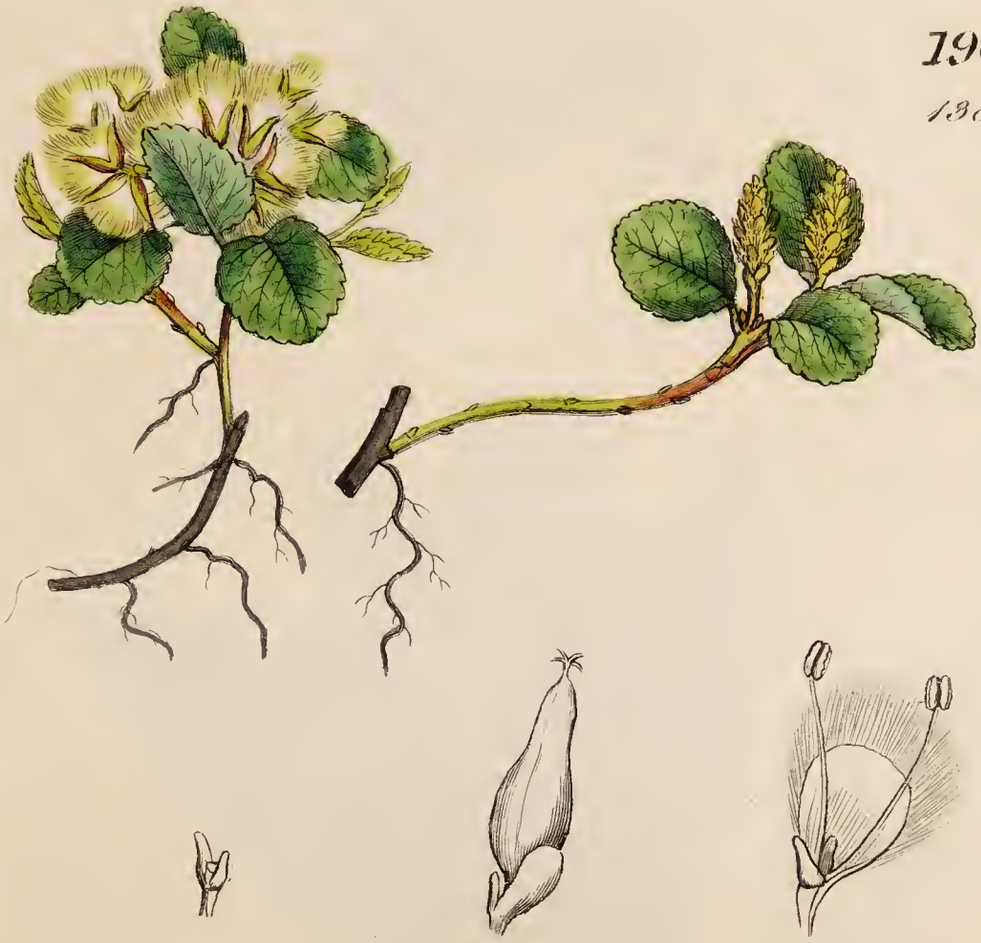


Salix myrsinites.

Sept.r 1.1804. Published by Ja.s Sowerby, London.

1907

1382.



Salix herbacea.

July 1.1808. Published by Ja.s Sowerby London.



Salix hastata.

July 1. 1806. Published by Jas Sowerby, London.

526.
1384.



Empetrum nigrum.

560.
1385.



Ruscus aculeatus.

March 1. 1799 Published by [illegible]



Viscum album.



June 1. 1805. Published by Jas. Sowerby, London.



Hippophae rhamnoides.

Jan.y 1797 Published by J.s Sowerby London

1388.



Myrica Gale.

Marc.ª Lucas Published by Longman & Co.



Humulus
Lupulus

Jan.ʸ 1ˢᵗ 1796 J. Sowerby Lond.



Tamus communis.

1618

13.91.



Populus alba.

July 1 1806. Published by Jas. Sowerby London.

1619
1392.



Populus canescens.

July 1806. Publish'd by Ja.s Sowerby, London

1909

1393.



Populus tremula.

July 1.1808. Published by Jas. Sowerby London.

1910

1394.



Populus nigra.

July 1.1808. Published by J. Sowerby London.

502.
1805.



Rhodiola rosea.



1872

1396.



Mercurialis perennis.

Apr. 1 1808. Publish'd by Ja.s Sowerby London.

559.
1397.



Mercurialis annua.

Published by ...

808

1398.



Hydrocharis
Morsus-Ranæ.

Nov.r 1. 1800. Publish'd by Jas Sowerby, London.

1100

1399.



Juniperus communis.

Dec.r 1 1802 Published by Ja.s Sowerby London.

740
1400.



Taxus brevifolia.

1401.



Atriplex
portulaccoides.



Atriplex laciniata.

J. Sowerby del. March 1794

936.

1403.



Atriplex patula.

1774
1404



Atriplex angustifolia.

J. Curtis, Jun.ª del. et sculp. Published by Curtis, London.

1405.



Atriplex erecta.

Dec 1 1810 published by Jas Sowerby London.

708.
1406.







Atriplex pedunculata.



Dec.r 1.st 1832.



2666.

1283 *



K.G. del.t

November 1st 1830.



April 1st 1833.



January 1st 1832.

1295 *



June 1811 published by Jas Sowerby London.

2772.

1295**



July 1st 1833



2431.

1342*



July 1 1812 published by J.de Sowerby London.

2.5.9.

1340 *



Sept.r 1st 1829.

1961

1350*



Published by Jas. Sowerby, London.

2617.

1350 **



Sept.r 1st 1829.

2651.

1332*



July 1st 1830


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α.m
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m.
f.



Sept. 1st 1831.









July 1st 1830.






f





Augusta Ist 1850



Jan.y 1.st 1835.


f
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m
m
m



2753.
1381 *



October 1st 1832



2816.

1397 *



March 1st 1838.

